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For Index to Advertisements see Page 166. **For Literary Contents see Page 178.**

INDEX TO ADVERTISEMENTS.

(THOSE WITHOUT NUMBER OF PAGE DO NOT APPEAR IN THIS ISSUE.)

	PAGE.
Aird, J. ... ... Tubes	192
Ashbury Railway Carriage and Iron Co. (Ltd.) Railway Carriages, &c.	165
Austin, J. B. ... ... Mineralogist	165
Bandell, H. E. ... ... Agent for Foreign Houses, &c.	—
Bank of Africa, (Ltd.)	165
Banking	188
Bennett, Sons, and Co. ... ... Fuse Manufacturers	192
Bowes-Scott and Western ... ... Mining Machinery	192
Bright and Co. ... ...General Brokers	—
Bromfield-Ingersoll Rock Drill Co. (Ltd). ... ... Rock Drills	—
Burwell and Co. ... ... Mining and Civil Engineers	165
Bute Works Supply Company (Limited) ... ... Steel Rails, &c.	178
Business Cards	189
Calvert, Albert F. ... ... Mining Engineer	165
Campbell, Macmaster & Co. ... ... Mining Steel Castings	—
Cannock Chase Colliery Company ... ... Coal Exporters	165
Cassel Gold Extracting Co. (Ltd.) ... MacArthur-Forrest Process	189
Champion Rock Borer Co. ... ... Rock Borers	168
Charleton, A. G. ... Mining and Metallurgical Engineer	165
Clarkson, T. ... ... The "Rapid" Sampler	167
Clarkson-Stanfield Concentrator (Ltd.) ... Dry Concentration	169
Companies and Legal Announcements	188
Cornforth and Co. ... ... Share Dealers	165
Cotton Powder Co. (Ltd.) ... ... Explosives	192
Davey, Paxman and Co. ... ... Mining Machinery	172
Davies, Henry ... ... Mining Engineer	165
Davis and Son ... ... Mining, &c., Instruments	169
Daw, A. and Z. ... ... Mining and Civil Engineers	165
Daw, A. and Z. ... ... Rock Drills	190
Delta Metal Co. (Ltd.) ... ... Metal	167
Dixon and Co. ... ... Iron Roofs and Buildings	167
Dixon and Corbett and R. S. Newall and Co. (Ltd.) ... Wire Ropes	167
Elliman, Sons, and Co. ... ... Embrocation	188
Epps and Co. (Ltd.) ... ... Cocoa	167
For Sale	188
Francis and Jenkins ... ... Copper Works Ladles	—
Fraser and Chalmers (Ltd.) ... ... Mining Machinery	165
Frictionless Engine Packing Company ... Engine Packing, &c.	168

	PAGE.
Galloway's (Ltd.) ... ... Steam Boilers	—
Gates Ironworks Co. ... ... Rock and Ore Breaker	190
Gilkes and Co. ... ... Turbines	—
Greening and Sons (Ltd.) ... ... Wire Manufacturers	191
Green, G. ... ... Ore Dressing Machinery	—
Green, J. G. ... ... Mining Engineer	165
Halse, E. ... ... Mining Engineer	165
Hart and Richards ... ... Share Brokers	165
Harvey and Co. (Ltd.) ... ... Mining Machinery	191
Hett, C. L. ... ... Turbines	163
Holman Bros. ... ... Rock Drills and Compressors	169
Howes, S. ... ... Turbines	—
Humboldt Engineering Works Co. ... ... Mining Machinery	167
Humble, S., jun. ... ... Hand Power Fan	190
Huntington, Professor ... ...Instruction in Assaying	165
Ingersoll-Sergeant Drill Co. of America. Rock Drills and Compressors	166
Ireland, James ... ... *Colliery Ready Reckoner*	—
Jones, J. A. ... ... Mining Engineer	165
Jose, Ford and Co. ... ... Shipping Agents	178
Kitto, B. ... ... Assay Office	165
Krupp Grusonwerk ... ... Ore Extraction Machinery	167
Lancashire Patent Belting Co. ... ... Mining Specialities	—
Lancaster and Tonge ... ... Steam Pistons	167
Lewis and Sons ... ... Tubes	168
Lloyd and Lloyd ... ... Tubes	—
Maclean, J. Grant ... ... Share and Iron Broker	165
Marsden, H. R. ... ... Stone Breakers and Ore Crushers	192
Martin and Pethybridge ... ... Assay Laboratory	165
Merry and Co. ... ... Assayers	165
Merton and Co. ... ... Aluminium	168
Nobel's Explosives Co. (Ltd.) ... ... Water Cartridges, &c.	—
Osborn and Co. ... ... Steel Castings	166
Pacific Mining Agency and Trust Company... Commission Agency	178
Parkin ... ... Signal Bells	167

	PAGE.
Pass and Son ... ... Buyers of Lead Ashes, &c.	178
Phosphor Bronze Co. (Ltd.) ... ... Bells Metal, &c.	169
Piggott and Co. ... ... Welded and Rivetted Pipes	—
Publications	189
Pulsometer Engineering Co. ... ... Steam Pumps	—
Robey and Co. ... ... Engines and Ore Crushers	—
Roburite Explosives Co. (Ltd.) ... ... Explosives	191
Ropeways Syndicate ... ... Aerial Wire Ropeways	—
Rose, James ... ... *New Guide to the Iron Trade*	165
Sales by Auction	188
Schram and Co. ... ... Rock Drills and Compressors	168
Seward, William ... ... Share Dealer	165
Shipping	188
Smith, Chas. ... ... Mining Agent	165
South African Trust and Finance Co. (Ltd.) ... Investments, &c.	—
Spencer, John ... ... Iron and Steel Tubes	163
Stanley, W. F. ... ... Mathematical Instruments	163
Stewart and Clydesdale ... ... Iron and Steel Tubes	—
Tacknote ... ... *Form of Licence to Explore*	—
Tangyes Limited ... ... Engines, &c.	—
To Let	188
Tuck and Co. (Ltd.) ... ... Packing Manufacturers	190
United Asbestos Co. (Ltd.)... ... ... Asbestos	189
Unity Safety Fuse Co. ... ... Safety Fuse	—
Vercoe, H. B.... ... ...Mining Engineer	165
Vivian's Boring Co. (Ltd.) ... ... Boring Machinery	163
Walker Brothers ... ...Air Compressing Engines	—
Wanted	188
Watson, P. and Co. ... ... Share Dealers	163
Wellington and Co. ... ... Rock Drills	191
Wiggin and Co. (Ltd.) ... ... Nickel Refiners	178
Wood, Charles ... ... Portable Railways, &c.	—
Woolcock, W. ... ... Civil and Mining Engineer	165

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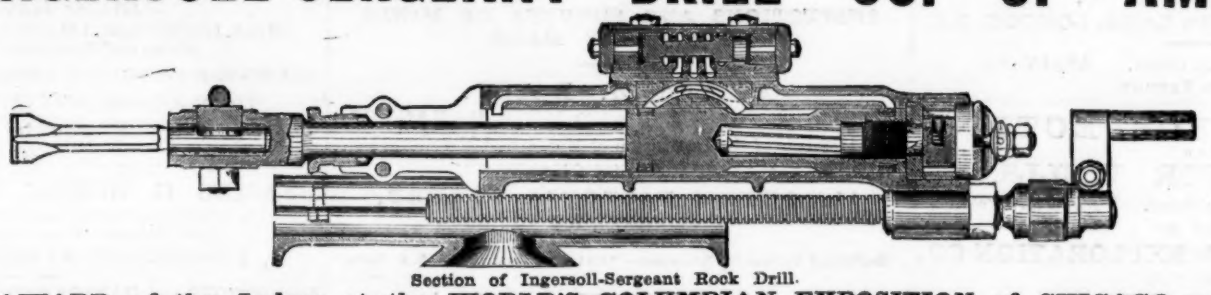

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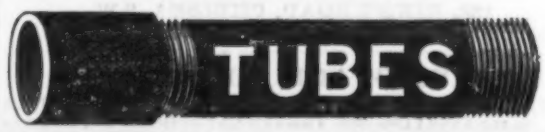

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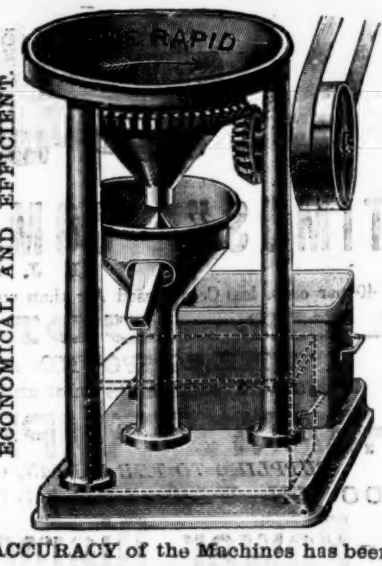

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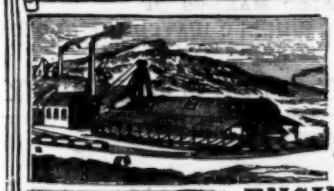

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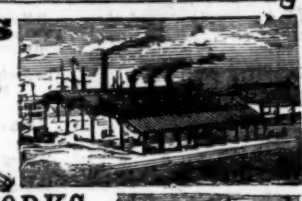

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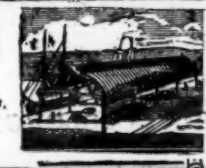

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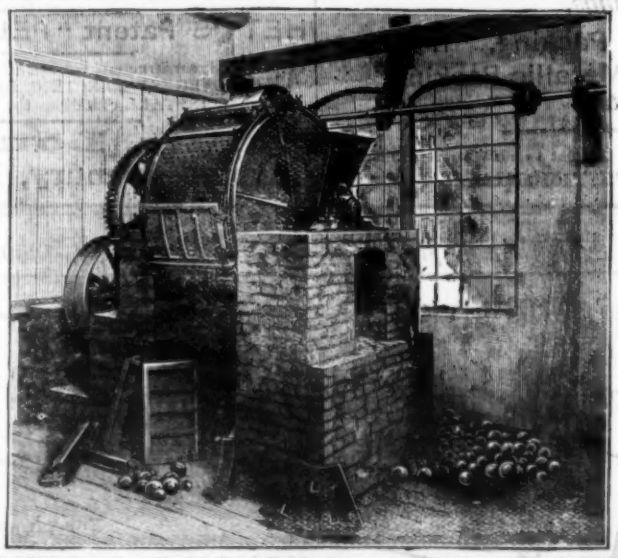

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Lang's Patent construction of IRON AND STEEL Wire Ropes

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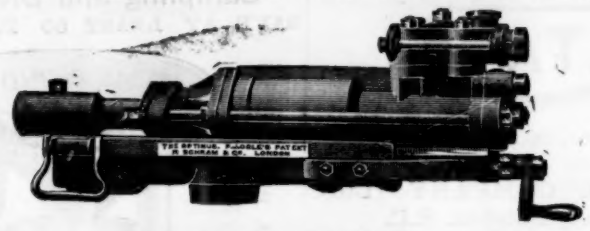

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NO STABLE IS COMPLETE WITHOUT

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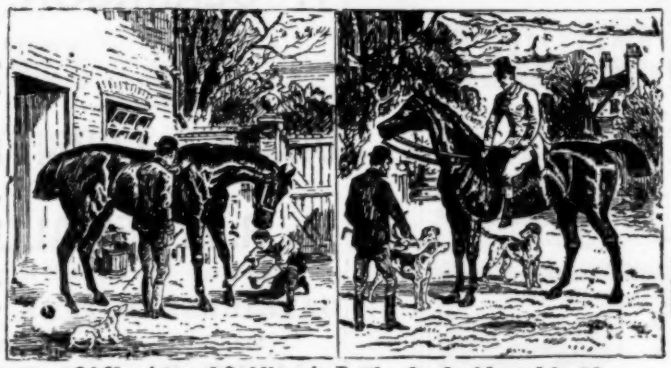

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"Exceedingly good for sprains and cuts in horses, and also for cuts in hounds' feet."
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"I find it a very efficacious remedy."
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"It is with great pleasure I certify to the quality of your Embrocation. I have used it with success when other remedies failed, and I am never without it."
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"Your Embrocation has done good service since used for our underground horses."
Yours truly,
The Trafalgar Colliery Co. (Ltd.), FRANK BRAIN, Manager.

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"I beg to inform you that the Royal Embrocation has been very efficacious by using it for the horses of my regiment, and I beg you to send again 25 bottles.
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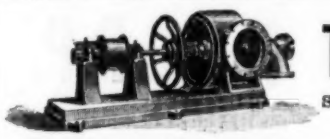
GOLD MEDAL, Inventions Exhibition, 1885
" " Mining " 1890



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CAN BE SPECIALLY MADE FOR MULE TRANSPORT.

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Gold Medal, International Exhibition, Paris, 1889. *Gold Medal, Exhibition of Mining & Metallurgy, London, 1890*

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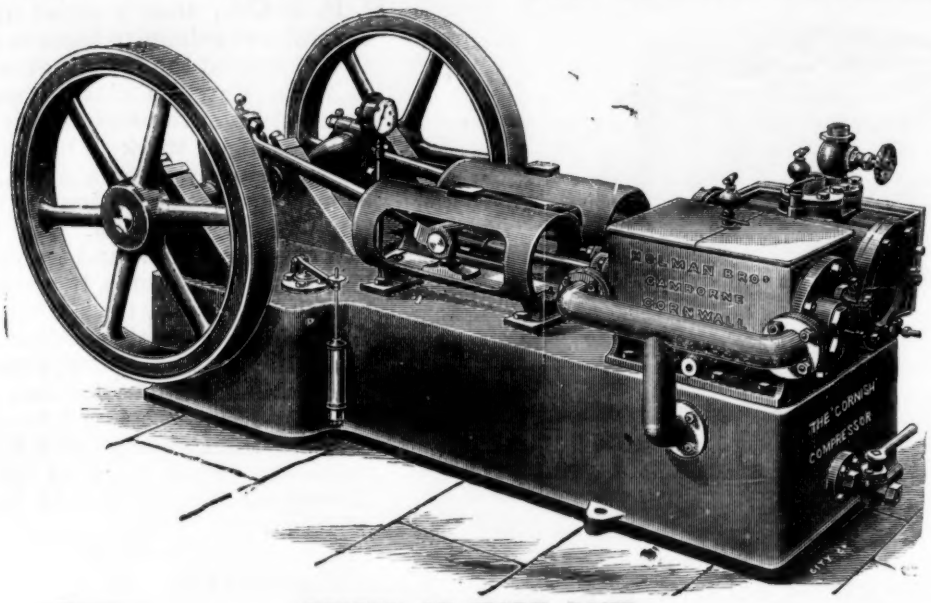


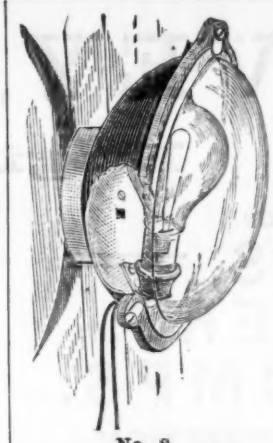
RECORD OF WORK DONE

At Botallack Mine, St. Just, Cornwall, **TWELVE MEN** with **TWO** new Patent **CORNISH ROCK DRILLS** drove, sunk, and rose **288 FATHOMS** in **12 MONTHS,** equal to five times the Speed of Hand Labour.

At Wheal Grenville Mine, Camborne, Cornwall, **SIX MEN** with **TWO** new Patent **CORNISH ROCK DRILLS** started from the **150 FATHOMS** level and put up in **EIGHT MONTHS** a **11 FEET** by **5 FEET PERPENDICULAR RISE 46 FATHOMS 5 FEET 6 INCHES,** and about midway drove **1 FATHOM 5 FT.** No communication of any kind was effected until holing to the Shaft brought down from surface.

Estimates for ROCK BORING PLANT and GENERAL MINING MACHINERY on Application.

London Representative: Mr. E. M. TOUZEAU, Leadenhall Buildings, London, E.C.



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ELECTRIC FITTINGS & STORES.

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ELECTRIC Blasting Apparatus.

TELEPHONES, ELECTRIC SIGNALS, LIGHTNING CONDUCTORS.

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Gold Medal Mining Exhibition, 1890.

"THE ENGINEERING TELEGRAPH CODE USED.

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BEWARE OF ALL IMITATIONS, & SPECIFY THE COMPANY'S MAKE.

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The Phosphor Bronze Company, Ltd.

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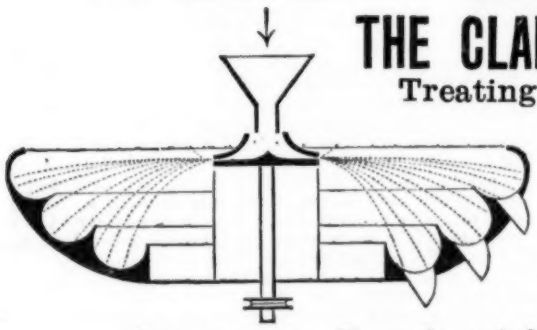
Highest Award at the Mining Exhibition, 1890.

DRY CONCENTRATION.



THE CLARKSON-STANFIELD CONCENTRATOR (LIMITED), are successfully

Treating the ores of Gold, Silver, Copper, Lead, Tin, Zinc, Cobalt, &c., &c. of all degrees of fineness, from 30 to the finest meshes by their NEW MACHINERY which may be seen in operation at

6, COLONIAL AVENUE, MINORIES, LONDON, E.

Homogeneous substances, such as Emery, Glass, Sand, Sulphur, Black Lead, &c., graded according to size in one operation.

Terms for Experimental Concentration, and for Supply of Machines on Application.

NEW PATENTS.

LIST of APPLICATIONS for New Patents relating to Mining Metallurgical, Engineering, Railway and kindred matters, specially compiled from official sources for the "Mining Journal" by Messrs. Rayner and Company, Patent Agents, 37, Chancery Lane, London, W.C., who will forward all information regarding them free on application.

1878 Charles Browning, 144, Larches Street, Sparkbrook, Birmingham.—A new improved form for junction for attaching branch metal pipes to mains.—January 29.

1893 Thomas Moy, 8, Quality Court, Chancery Lane, London.—A new mechanical device for transmitting motion.—January 29.

1910 John Wotherspoon and James Davie, 321, High Holborn, London.—Improved apparatus for filtering or purifying feed water for marine and other steam boilers.—January 29.

1913 Oliver Imray, 28, Southampton Buildings, Chancery Lane, London.—Improvements in coal and rock drills.—January 29.

1914 Oliver Imray, 28, Southampton Buildings, Chancery Lane, London.—Improvements in coal and rock drills.—January 29.

1916 Thomas Darding, 115, Cannon Street, London.—Improvements in motive power engines, pumps, meters, and the like.—January 29.

1942 Charles Arthur Allison, 52, Chancery Lane, London.—Improvements in multiple cylinder steam engines.—January 30.

1964 Charles William Appleyard, 65, Maperton Road, Bradford.—An improved valve for use in connection with compressed air.—January 31.

1999 Joseph Matthews, 6, Lord Street, Liverpool.—Improvements in fire-bars or furnace-bars, and in foundry devices for use in casting the same.—January 30.

2005 Charles Ferdinand de Kierzkowski-Steuart, 28, Southampton Buildings, Chancery Lane, London.—Improvements in internal combustion motors.—January 30.

2016 George Croydon Marks, 18, Southampton Buildings, Chancery Lane, London.—Upright water tube boiler.—January 30.

2032 Murray Curtis Slusser and William Jacob Slusser, 77, Chancery Lane, London.—Improvements in and relating to nut locks.—January 30.

2052 Herbert Young Dickinson, 56, Gray's Inn Road, London.—Improvements in expanded metal open work and machinery for producing the same.—January 30.

2064 Herbert Fraser Foster, 64, Cornwall Road, Westbourne Park, London.—Improvements in gas and other internal combustion engines.—January 31.

2067 James Dixon Churchill, 36, Alexandra Road, Finsbury Park, London.—Improvements in water heating apparatus.—January 31.

2095 James Jones Meldrum and Thomas Fred. Meldrum, 15, Water Street, Liverpool.—Condensers.—January 31.

SPECIFICATIONS PUBLISHED.

1745, Boyce and March, varying speed motion, 1893; 2231, Schmidt, steam engines, 1893; 3061, Walker and Strang, expanding pulleys, 1893; 4317, Kynock and Co., Limited, and another, steel punches, 93; 5091, Lever and mills, steam engines, 1893; 5363, Sinclair, steam boilers, 1893.

The above specifications published may be had of Messrs. Rayner and Company 18, Chancery Lane, London, at 10d. each including postage.

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**** We shall be obliged by being promptly placed in possession of particulars regarding contracts open for competition, and of the results of successful tenders. In the latter case contract prices should be given.*

The date given is that by which tenders must be delivered, in nearly all cases further information can be obtained on application at the addresses given. In applying for such the name of "The Mining Journal" should be mentioned as the original source of the information, concerning which further particulars are required.

HOME CONTRACTS.

Railway Stores, February 19 (*London, E.C.*).—For the supply of various railway stores for the Bombay, Baroda and Central India Railway Company. Specifications and forms of tender on application at the offices, 45, Finsbury Circus, E.C.

Railway Stores February 20 (*London*).—For the supply of general stores, locomotive and engineering stores and stationary for the South Indian Railway Company (Limited). Particulars to be obtained at the company's offices, 65, Gracechurch Street, E.C.

Wheels and Axles, February 26 (*London, E.C.*).—For the supply of twelve pairs of wheels with steel axles, and 276 spare steel axles for the Bengal and North Western Railway Company (Limited). Particulars of Mr. E. L. Marryat, Secretary, 237, Gresham House, Old Broad Street, E.C.

Water-Tank, February 27 (*Abergavenny*).—For the erection of a water-tank to hold 250,000 gallons at the Joint Counties Asylum, Abergavenny. Particulars of Messrs. Swash and Bain, 3, Friar's Chambers, Newport, Mon.

Sinking Pits (*Aberbeeg, Mon.*).—For the sinking of two pits near Aberbeeg, Monmouthshire, to the steam coal measures. For particulars apply to Messrs. John Lancaster and Co. (Limited), Blaina, Mon.

Sluice Valve, (*Manchester*).—For the supply of one 24-inch sluice valve for the Waterworks Committee. Plans and specifications on application to Mr. T. H. G. Berrey, Waterworks office, Town Hall, Manchester.

Excavation (*Neath*).—For excavation and concrete work. Apply, Eagle Tinplate Company (Limited), Neath.

Stores, (*Glasgow*).—For the supply of stores for one year from April 1, for the Pumpherston Oil Company (Limited), 24, St. Vincent Place, Glasgow. Specifications and forms of tender on application at the office.

Construction of Railway (*Madrid*).—The Secretary of State for Foreign Affairs has received from Her Majesty's Ambassador at Madrid, a copy of a royal decree, inviting tenders for the construction of a railway from Manila to Taal by Calamba and Batangas. The decree can be seen at the Foreign Office, S.W., on week-days between 11 and 6.

DEAFNESS AND NOISES IN THE HEAD cured at the patient's home. This Illustrated Edition also treats on the cure of Catarrh, Bronchitis, Asthma, Extreme Stoutness, Indigestion, Dyspepsia, Rheumatism, by Medico-Electricity.—4d. G. R. BRIGHT, Publisher, 8, Tavistock Place, London, W.C.—[ADVT.]

OUR INQUIRY COLUMN.

TO CORRESPONDENTS.

Correspondents will please take note that all communications will in future be answered in this column and not through the medium of the post. All questions and replies should be accompanied by the name and address of the writer.

QUERIES.

MINER.—Will some reader kindly give me the rule to solve the following:—The smaller diameter of the drum of a colliery winding engine is 3 feet, and the greater 11 feet (rope ¾ inch thick), the load comes to bank in 5½ turns of the drum. Where is the meeting or half shaft, and how deep is the shaft? The drum is conical.

W. R.—Will someone kindly inform me what qualifications are necessary, and the nature of examinations to enable me to become a member of the Institute of Civil Engineers.

J. S.—Would some reader oblige me with the dimensions of a vertical boiler, and the thickness of plate (iron) required to drive a 2-inch bore cylinder? What pressure could be obtained?

REPLIES.

J. S. L.—We have tried several sources but have been unable to get the information you require. We think you will experience considerable difficulty in obtaining it.

J. W.—Minerals are distinguished from one another in the first place by their chemical composition, and in the second by their form and by other physical properties. They are also distinguished by their colour, streak, hardness, fracture, lustre, and specific gravity. The majority of minerals crystallise in definite forms and the form and optical properties of the crystals constitute most important characteristics; many are not distinctly crystalline, but are either earthy or occur in masses, or may be reniform, botryoidal, granular, or laminated. Some few minerals are flexible and some elastic.

DRUID.—The Pribrand Mine (silver) in Bohemia is said to be the deepest mine in the world. It exceeds 3000 feet in depth. Several of the mines in Westmoreland are very deep and extend for a considerable distance beneath the sea.

SUBSCRIBER.—1. The principal are magnetic iron ore, hematite, spathic iron ore, and clay ironstone. 2. To remove impurities and convert pig iron into wrought iron it undergoes the process of refining and puddling. 3. Chemically pure iron is obtained by heating the oxide in a current of hydrogen or carbon monoxide.

READER.—Although a strong supporter of the system he was not the originator of it.

CONSTANT.—The papers are equally suitable for the purpose you name.

R. S.—Soft steel stands a strain of about 28 tons per square inch of sectional area.

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Engineers, Colchester.

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ENGINES, BOILERS, PUMPS.

AND ALL DESCRIPTION OF MACHINERY FOR MINING.

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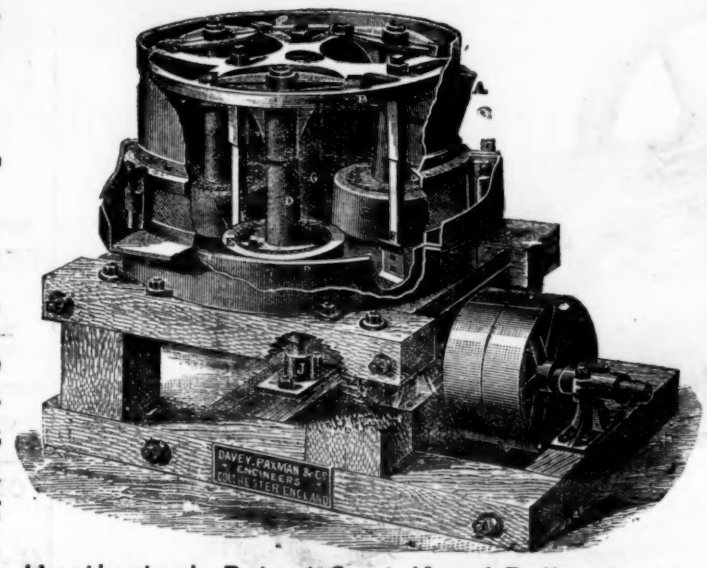

Huntington's Patent Centrifugal Roller Quartz Mill for fine pulverizing in Concentration.

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78 [late 139], QUEEN VICTORIA STREET.

D. P. & Co., after a great number of careful experiments have so improved and perfected the Huntington Mill that it must now be classed among the greatest inventions of the age. The excellence of its work is undoubted, and its superiority over Stamp Mills will soon cause a revolution in its favour for Quartz Crushing. Its first cost, and cost for freight and transit is much less than for stamps, it absorbs about half the power for the same output, and is continually crushing. It can be fixed and started in 12 hours, requiring for foundations only two pieces of timber 12 in. by 12 in. by 14 feet long, is more reliable than stamps, and has perfect delivery. It is used to its greatest advantage on gold quartz, for, because of its excellent amalgamating properties, it catches about 75 per cent. of the gold put into it.

Full Particulars on Application to

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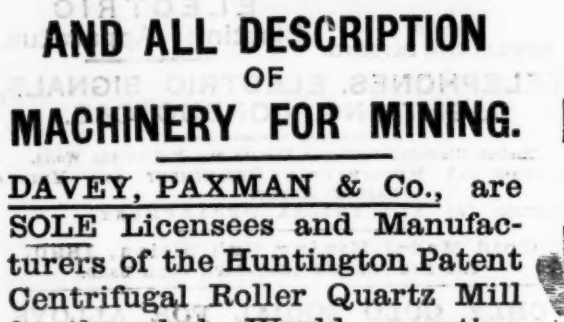
Illustrated Descriptions of New and Standard Mechanical Appliances, Accessories and Processes, adapted to Mining, Metallurgical, Railway, Engineering and other Industrial Purposes.

AN IMPROVED PORTABLE DRILLING MACHINE.

MR. J. JARDINE, of Nottingham, has provisionally protected a new improved portable drilling machine for the purpose of drilling the holes necessary for erecting large machinery. In its present form the invention is the result of a long personal experience and of repeated modification.

To the ordinary machine, such as has been in use by the firm for years, some improvements have been made with the object of fastening the radial arm, carrying the drill stock at any angle and in any required position easily, and yet so securely that no slipping shall occur whilst the drill is at work. This object is attained by making on the top part of the pedestal or column, which carries the radial arm, a disk in which is made a circular V groove, and to which a second loose disk is fitted, made with a



projecting and corresponding circular V. A V groove is cut across the face of the loose disk to receive the radial arm. Through the centre of both disks an eyebolt is passed through the eye of which passes the radial arm. The part of the eyebolt projecting through the disk on the pedestal is tapped and fitted with a nut which, when drawn up with a moderate pressure, securely fastens together the pedestal disk, the loose or movable disk, and the radial arm so that the danger of this arm, which carries the drill stock, shifting or slipping whilst at work is removed.

DEATH OF A WELL-KNOWN ENGINEER.—We regret to announce the death, within two days of his 90th year, of Mr. John Galloway, one of the founders of a great engineering business at Manchester, and known in commercial circles as "the father of the Manchester iron trade." He was a son of Mr. William Galloway, a native of Coldstream, N.B., who about the end of the last century became a successful millwright and engineer in Manchester. Mr. John Galloway was associated with some of the greatest constructive works of his time, but never took an active part in public movements, though he was known as a Liberal in politics, and a member of the United Presbyterian Church. One of his sons is Chairman of Galloways (Limited), the company by which the works of the late Mr. Galloway and his partners is now carried on.

SPECIAL CORRESPONDENCE:

COLONIAL AND FOREIGN.

MINING IN ASTURIAS (SPAIN).

NOTEWORTHY GEOLOGICAL FEATURES.—HISTORICAL NOTES.

(FROM OUR OWN CORRESPONDENT).

GIJON, *6th February*, 1894.

THE geological features of the western portion of this province may be considered noteworthy, owing to their favouring the development of mineralised zones through metamorphism. This may be the result of several causes, but the principal ones to deal with in this case are—(*a*) the fracturing of super-incumbent strata by eruptive forces, causing the alteration of the molecular formation of rocks by heat produced by lateral pressure, and (*b*) by contact with, and the radiation of heat from the pasty mass, that has forced its way through the strata. These consequences are visible in most cases throughout the portion of the province under observation. Taking as the first group, a belt of the extreme west, having the river Navia as the eastern boundary, and the province of Lugo in Galicia as that of the west, we find that between Poso and Valouta, two small villages on the south of the province, there is a patch of granite of about a mile square, rising through nearly black slate, that has long thin needle crystals of chiastolite, and on the east, white quartzite in perpendicular banks. Not very far from this are the auriferous debris washed yearly by the country people. Going north from this, we come to Ibias, where there are some silver lead mines, worked by the ancients, and also for some time recently. Continuing still north to Boal, a fair-sized town, where there is another important granite mass, we find that not only has the slate the characteristics of that of Poso and Valouta, but that the portion in contact with the granite (which here is a granite with muscovite), has been changed to gneiss and micaschist, to a distance of 1000 metres on some sides. Here there is a copper pyrites mine that was worked many years ago.

Going still further north, near to the extreme outcrop of this eruptive matter, we find another change:—Chiastolite has disappeared, and the slate mass has been converted to chlorite schists, with here and there crystals of microcline.

Returning again to Boal, some of the natural beds of slate are charged with crystals of garnet and pyrope, and seven leagues south by west of this, near the village of Sena, a chloritic schist well charged with crystals of garnet forms the walls of an argentiferous lead lode, worked by the ancients very extensively.

Going north by west from Boal to the coast, at a place called Salabo, there is an upheaval of kersantite, comprised of plagioclase, chiastolite, orthose, black mica, oxide of iron, sphene, and titanic iron. This mass has a plane surface, and rises to about 40 metres above the sea level. It is about three kilometres long, and a kilometre wide, with interlying beds of syenite and porphyry, this latter interlarded with thin lamina of molybdenum. On the south-east side there are several qualities of diorite; of granwacke on the south, and of quartzite on the west; and in the slate on the east there is a considerable lode of magnetic iron ore, whilst further east there is a bank of eurite.

This mass has an enormous ancient working, which is set down to the time when the Phœnicians were so adventurous.

They worked here for cassiterite, and this place may be looked upon as that of their first steps in mining in Asturias. The extent of the workings shows that the mine was productive, and that they worked here for a long series of years. They brought the water for separating the ore by an aqueduct over a distance of two and a half leagues. The workings were carried down from an open face to several levels, with galleries at different depths to drain to the sea. These remained unexplored until 1830, when an attempt was made to unwater them. As the water was lowered to the various levels, banks of turf with interlying beds of clay were met with, and at length immense workings were reached, holding sufficient water to frighten the adventurers, who gave the matter up. This portion of the workings was surrounded by the porphyry, holding the molybdenum.

Since that date no one has touched them, but since then improvements in pumping machinery have been brought to such a position that, what to them would appear a herculean task, to engineers of to-day would be an ordinary piece of work. Here a good paying mine might be reopened.

Between Boal and this spot there are several ancient workings in a bank of quartzite, and the river that drains the watershed of these workings has continuously yielded gold to the country people, who pan it during the summer months.

To the west of Boal is an isolated bed of limestone, and in its contact with the schist there are several ancient workings. There is nothing to show what mineral was worked; probably it was lead.

South from these, in the Oscos district, there is a group of ancient workings, and within the last 15 years mines were opened here on some deposits of galenite and cerussite. A smelting works was established and run for some time, but the distance from the port of Rivadeo, and the absence of roads that would permit the cartage of fuel and of the lead produce, annulled results, and these works and mines are now shut down.

The fauna of the beds of schist are comprised of *paradoxidæ*, *trochocystites*, *conocephalidæ*, and *scolithes*, and excepting the eruptive masses and ridges, three quartzite beds, having a general direction of north-south lying concordantly with the general run of the main strata, and several isolated banks of limestone. The general strata is composed of schists, all of the Cambrian series. The subject of the next notes will be a zone parallel to this, to the east of it.

TIN TICKETING.

A TICKETING for tin ores was held at Redruth, on Tuesday, with the following result:—

VALUES OF ORES SOLD BY EACH MINE.

	Tons cwts.	Per ton.	Value.
Carn Brea No. 1	18 0	£38 15 0	£697 10 0
do No. 1a	18 0	38 7 6	690 15 0
do No. 1b	18 0	38 15 0	697 10 0
do No. 2	2 0	31 10 0	63 0 0
Wheal Grenville No. 1a	21 0	44 5 0	929 6 0
do No. 1b	15 0	43 2 6	646 17 6
Dolcoath No. 1	17 0	42 17 6	728 17 6
do No. 1a	17 0	43 0 0	731 0 0
do No. 1b	16 0	43 0 0	688 0 0
Tincroft	15 0	38 15 0	581 5 0
do	15 0	38 15 0	581 5 0
do	2 10	23 15 0	59 7 6
South Frances Utd, No. 1	14 0	41 2 6	575 15 0
do No. 1a	13 0	41 7 6	537 17 6
East Pool No. 1	20 0	39 7 6	787 10 0
do No. 2	1 10	19 0 0	28 10 0
Killifreth	14 0	42 12 6	596 15 0
Phœnix United	20 0	42 7 6	847 10 0
Phœnix United No. 1	2 0	28 7 6	56 15 6
do. No. 2	1 0	20 7 6	20 7 6
West Kitty	11 0	44 2 6	485 7 6
Wheal Agar	11 0	38 12 6	424 17 6
South Condurrow	8 0	44 12 6	357 0 0
Wheal Kitty	7 0	44 10 0	311 10 0
West Frances	15 0	43 7 6	650 12 0
	312 0		£12,775 0 0

EXTENSION OF PREMISES.—Messrs. Baird, Thompson, and Co., ventilating, heating, &c., engineers, having recently acquired on most favourable terms, the splendid freehold property known as Charlton Engineering Works, and also the property adjoining, together with the machinery and plant contained therein are having the same fitted up with all the most recent improvements and labour saving appliances suitable for their engineering and manufacturing requirements. The Charlton Works, which occupy a large area, are centrally situated, being almost opposite the entrance to the Agricultural Hall, Islington, N., and when completed will probably be the largest and finest in the trade, proving a most valuable acquisition in enabling this enterprising firm to cope with their largely increasing business. The whole of the buildings are to be lighted by electric light.

THE MINERAL WEALTH OF HUELVA.

Being an Illustrated Article on the History of this District from the earliest times.

[Specially written for *The Mining Journal.*]

II.

(Continued from page 153).

SOME persons who have seen these stones attribute their use to the grinding of cereals, but the suggestion of the late Mr. J. Arthur Phillips, who carefully examined them shortly after their discovery, seems the most likely. He thought the primitive inhabitants of the locality must have employed them for mixing pigments with which to decorate their bodies. This certainly seems the most probable explanation of their use.

At any rate, the peculiar site in which one, at least, was found, in exact contact with the lode, proves that the lode itself must have been known to its owner. Any other supposition as to the manner in which they reached their resting place of centuries implies, first, an uncovering of the mass of mineral and then a subsequent covering up of the same, accompanied with the peculiar coincidence of placing the pestle exactly alongside the stone which served as the mortar. The unlikelihood of these operations is so great that we may dismiss them at once.

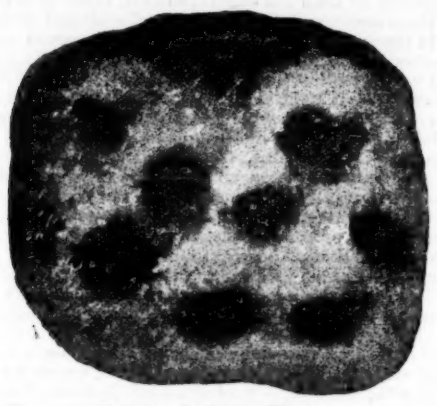


FIG. I.—A STONE RELIC.

Whether the fine race of the Neolithic period, named the Cro-Magnon, or any of the later primitive inhabitants of Spain which we know of, such as the Basques, the Iberians, or the Celts worked in the Huelva mines during the prehistoric ages, it would be presumptuous to speculate on; but that these mines were worked in those ages we may safely assert.

The Ancient Period.—Mountains of Slag.

One of the most striking features of the pyrites mines in the Huelva district is the extraordinary amount of slag found in their vicinity. In the more important mines the heaps of this refuse may almost be called mountains, and the whole district certainly contains millions and millions of tons. The industrious activity, the amount of superintendence, aye, and the wanton cruelty which their production must have necessitated, can only be appreciated by those who have stood on them and speculated on the toil represented by their formation.

A close examination of these slags shows two distinct classes. In one the lumps are large and black, whilst in the other they are smaller and of a brownish colour. The former frequently lie on top of the latter, with a clear line of division, but these never on top of those; and at Rio Tinto, at least, the heaps of a brown colour generally lie in the bottoms of the small valleys, whilst the larger and darker ones are tipped out from steep hill sides, or are formed into large hillocks in the flats. In these heaps consisting of dark coloured large lumps, tools, pottery, and coins of undoubted Roman origin are found. In the heaps of the other quality nothing distinctive can be traced, and the frequency with which they are covered by the evident production of Roman enterprise, indicates clearly that they result from the work of a race which carried on the exploitation of these mines before the power of Rome extended into that part of the Iberian Peninsula with which we are treating.

The Phœnicians and Carthaginians.

The Phœnicians and Carthaginians are the only two races whose connections with that country before the time of the Romans would have enabled them to carry on the work in question, and we have no hesitation in selecting the Phœnicians.

Carthage was founded by off-shoots of the Phœnicians in 825 B.C. Although its founders were naturally occupied in the settlement of its early affairs for many generations, yet its rise could not have been very slow, for about 650 B.C. we have indications that the new power was already dealing with Spain, and from this date it gradually acquired and kept a preponderating influence in that country until driven from it entirely about the year 205 B.C. by the conquering arms of Rome in the Second Punic War.

The Invention of Coining Money.

Now, the coining of money was invented about 700 B.C., the climax of the artistic value of its designs was reached about 350 B.C., and by 200 B.C. this had visibly begun to decline. That is to say, these stages were passed through during the Carthaginian dominion in Spain. How is it, then, that coins of Carthaginian origin are not found in the Huelva mines, whilst in those of Carthagena, in the Province of Murcia, not only are they found in abundance, but it is known that they were manufactured there? If the one place had been occupied and its mines worked in the same manner as those of the other, most assuredly they would be found there also; hence, their absence in the mining district of Huelva can only indicate its non-occupation by the Carthaginians.

However, it is not at all necessary to have recourse to any circumstantial demonstration of this point, for the ancient writers have left us a superabundance of references, showing quite clearly that it was the Phœnician race which really carried on the earliest of the two exploitations corresponding to ancient times.

Phœnician Exploitation.

It is universally admitted that the Phœnicians were the foremost among ancient nations to extend their commercial relations, first, to the western extremities of the Mediterranean, and, finally, to the Atlantic itself, where they knew not only the countries adjacent to its shores, but many islands removed considerable distances from them, and amongst these Great Britain itself.

We are not under the necessity of founding this belief on mere supposition so far as Spain or the Iberian Peninsula is concerned, for the ancient writers and geographers have, as already said, left abundance of references, not only to the commercial relations of the Phœnicians with Spain, but their chief factories or emporiums in that country are even mentioned by name, and can be identified with perfect ease at the present day. Their navigation can be followed along the North coast of Africa, until, having arrived at that part of the Mediterranean where the distance from shore to shore is short, they no doubt crossed over to examine the Spanish coast, being received sometimes in a friendly, sometimes in a hostile manner by the natives. In some of their very earliest voyages they sailed beyond the Straits of Gibraltar and founded (Cadiz), having previously looked into the harbour of Onoba (Huelva). Gadir, although it had no fresh water, was from its semi-insular configuration a perfect locality from which to prosecute their colonising and trading intentions, so they determined to settle there, and founded a temple to Hercules. Along the Mediterranean coast they occupied Karteia (near Gibraltar), Malaca (Malaga), Sexs (near Motril), and Abdera (Adra), whence their settlements stretched eastward until the Balearic Isles were reached, for there they founded Ebusus (Ibiza). If their possessions did not extend further along the coast their influence certainly did, as we find they were acquainted with the Pyrenees, from the neighbourhood of which mountains they were able to obtain so much silver that they resorted to the artifice of discarding their former anchors and other nautical implements made of baser material, and forging them anew of the more valuable metal. They were thus enabled to carry more of it to their homes. At these factories or colonies, trade was first of all carried on by means of barter; later on, as the natives became more accustomed to them, they made excursions inland, and finally they no doubt took possession of the country for a considerable distance from the sea coast.

(To be continued).

NEW ISSUE.

WEST AUSTRALIAN GOLD FIELDS (LIMITED).

SEEING the interest which Western Australia is exciting at the present moment, it is a somewhat significant circumstance that a company has been formed in London to exploit a part of this promising region. The name of this new undertaking is the West Australian Gold Fields (Limited), the capital of which is £100,000 in 100,000 shares of £1 each, of which 65,000 are now offered for subscription. To quote the prospectus, "the company is formed to conduct the business usually carried on by an exploration and agency company, more particularly in the colony of Western Australia, the total area of proclaimed gold fields of which exceeds 130,000 square miles. The first public goldfield was proclaimed in 1886, but little mining was done until three years later, since when great strides have been made, and the results obtained clearly indicate the probability of the gold fields of the other Australian colonies, as well as those of the Transvaal, being equalled or excelled. A comparison between the progress of the Western Australian gold fields, and the early results from the South African gold fields, shows that whilst 17 years elapsed before the South African fields produced £200,000 of gold, the fields of Western Australia exceeded that sum in the seventh year, and also shows that the output for the first seven years of the West Australian fields has been more than double the output for the first seven years, and has exceeded by nearly £70,000 the output for the first 14 years from South Africa; these results have been obtained, notwithstanding the fact that hardly any of the mines in Western Australia have (owing to lack of capital) yet been efficiently worked, and that a very small portion of the gold bearing area has yet been prospected.

"The recent failures of Australian banks and the consequent extreme scarcity of capital, which has hitherto been provided by the colonists, has created an exceptional opportunity for the investment of English capital. In order to take advantage of this opening, this company has been formed, whilst interests in proved and partially developed properties can be secured on low terms. In the case of established colonial companies, the course may be to purchase shares, or subscribe for shares, or make advances upon mortgage, or otherwise to provide additional working capital on such terms as may be agreed. It is also intended to prospect and explore for gold and minerals at Coolgardie under terms of an agreement with Mr. Saunders.

"Under terms of and subject to the conditions of contracts with the Hampton Lands and Railway Syndicate (Limited) this company obtains a right to prospect on 216,000 acres of land in the Coolgardie district, which was acquired from the Government before the recent discoveries. This land is not subject to the regulations of the Mining or Goldfields Acts, but is subject to a Government royalty of 2s. per ounce of gold and 2½ per cent. of silver. The contracts give the right to select blocks containing in the whole 600 acres—viz., 500 acres on the reefs and 100 acres of alluvial land. Valuable timber and water rights are conferred by the contracts, and also the option to exchange original blocks found unproductive after prospecting, and to purchase the freehold of any blocks selected for £5 per acre. One-third of the net profits accruing to the company from mining on this land will be payable to the Hampton Lands and Railway Syndicate (Limited). It is intended to at once dispatch a prospecting party to select claims, and Mr. Saunders has already sent out machinery for prospecting purposes, including a 'dry process' plant, so that no time need be lost in getting to work. The company has the option of purchasing this machinery at cost price.

"The local affairs of the company will be administered by Mr. H. J. Saunders, C.E., Mr. Alexander Forrest, and Lord Percy Douglas. Mr. Saunders, who is an ex-President of the Stock Exchange, Perth, W.A., acts as broker to many of the leading colonists, colonial mineowners, and mining companies, and is well known to the Agent-General, Sir Malcolm Fraser, K.C.M.G., and several of the leading firms trading with Western Australia. Mr. Alexander Forrest is brother to the Premier of the colony, and has had a large experience in regard to mining and commercial matters. Lord Percy Douglas is intimately acquainted with the gold fields, having himself mined at Coolgardie, where he has determined to settle. Lord Percy has now returned to Western Australia.

"An agreement has been entered into with Messrs. Bewick, Moreing, and Co., by which that firm undertake to open a branch business in Western Australia, under the management of their Mr. W. A. Mercer, A.M.I.C.E. and M.A.I.M.E., and act as advisory and consulting mining engineers on favourable terms to the company. Mr. Mercer is already on his way to the colony.

"Mr. Saunders has fixed the purchase price to be paid to him for his interest in the above-mentioned contracts at £20,000, payable as to £17,500 in fully paid up shares in the company, and as to the balance in cash; Mr. Saunders pays all expenses of formation of the company, down to and including allotment, but reserves the right to apply for and have allotted to him 17,500 shares at par prior to 31st December, 1894."

COMMERCIAL MINING.

By Mr. F. DANVERS POWER, F.G.S., M.A.I.M.E.

II.

(Continued from page 143.)

THE width of a vein is another important point. The cost of nearly all mining requisites is greater in proportion for narrow than wide veins, with the exception of timber. A man is cramped when working in a narrow place, and cannot put the same force into his actions as if he had more room. There are more re-entering angles in proportion to the area of the face when working in narrow than in wider levels, and therefore the miner is hampered in the judicious placement of his drill holes, and the effect of his blasting material is not so great as it would otherwise be. A miner naturally does not desire to extract more country than necessary, simply for the sake of enlarging his working place, or he may find a quantity of mullock left on his hands over and above that which he can utilise for packing purposes, which he has to go to the expense of sending to the surface. Even when given the length, direction, underlie, and width of a vein we have not all the knowledge we desire about it. Veins, as a rule, are not of the same value throughout, the greater portion is barren or nearly so; the rest is classified according to its nature into firsts, seconds, etc. The ore-bearing portions are termed "shoots," and the importance of a vein greatly depends on the dimensions and quality of these "shoots." We want to know the ratio of the ore to the gangue, and how much deadwork must be debited to each ton of ore extracted, also whether the ore is rich enough to bear the expense. The way in which the ore is distributed in its matrix, the nature and quantity of the associated minerals, and whether they are deleterious to the metal sought, must also be considered, for if disseminated through the vein stuff it may have to undergo the expense of being "dressed" before it is ready for the market.

Many expensive mistakes have been made by men who, only thinking of the metal to be extracted, have quietly ignored the presence of undesirable substances till it was forced upon them, as in the case of a certain iron ore in Tasmania. Mere traces of some impurities so impare the value of a metal as to decide whether a mine is to be placed on the list of paying or non-paying ventures. Such technical details can only be learnt by study and experience, for there is no royal road to this end. The rule-of-thumb man may manage to scrape along in simple cases, but as soon as a real difficulty arises he is utterly helpless, so has to fall back on his better informed neighbour for assistance. Shoots sometimes occur in the form of pipes, when they are called "pipe veins," and they extend for some distance more or less vertically. A shaft sunk on such a shoot would show ore all round. People before now have too hastily jumped to the conclusion that the vein between two shafts sunk on such cylindrical shoots was as rich as the ore they saw exposed to view, but later on have had reason to regret the loss of the money with which they backed up their opinions, supported in all probability by the crude judgment of some illiterate miner, instead of seeking the mature advice of a professional man.

The presence of much water in a mine in districts where surface water is scarce, or easily lost by evaporation, may be the salvation of a company. On the contrary, an excess of water that cannot be utilised, may prove its ruin. Working expenses are often greatly increased by the presence of objectionable gases in a mine, by the occurrence of swelling floors that must be cut down constantly, or by the nature of the rock, which, when hard, adds to the labour of mining, or if baulky, danger to life is added to the expense of careful timbering; while if a stratum of quicksand is encountered, all previous work may have to be abandoned while necessary arrangements are being made to dam it back. Occasionally, owing to the bad selection of a site, or due to mining operations themselves, the works are subject to "creeps" or landslips. I once remember seeing men working at a brown coal deposit in Australia in a most dangerous position, there being a huge slice of the hill above, ready on the slightest provocation to overwhelm them; in order to temporise, the manager had connected the slipping portion and the main hill with a rope attached to trees growing on the respective parts.

Certain minerals that depend on their size, colour, transparency and such like qualities for their market value must be prospected on a large scale to determine what output may be expected. Mica, for instance, is used for various purposes, depending on such qualities; the large sheets of white, transparent, flawless mica fetching the highest price, it is naturally the object of miners to avoid breaking up suitable pieces more than possible; yet in dressing it for the market there is much waste. A hundred pounds weight of block mica will scarcely yield more than about 15 lbs. of cut mica, and sometimes even less. The scrap, it is true, can be sold for minor purposes, but its value greatly diminishes with its size. When working a mine in the proximity of old excavations plans of such old workings should be secured when possible, for tradition is not to be relied upon, and is apt to become distorted by time. The possession of such plans may save a mint of money in advance work, in avoiding the unwatering of old workings, or the payment of compensation for death or injury to the workmen in case of accident. Shareholders have a voice in choosing the directors who actually carry on the business of a company, for very little work would be transacted if all the shareholders met to deliberate over every small detail. Directors are frequently elected before an individual, who is late in joining a company, becomes interested in the mine, but it rests entirely with that individual whether he throws in his lot with the others or not, and if he cannot assist in selecting the shareholders' representatives for that term of office, he at least has the opportunity of approving of their *personnel*. On looking over the names of directors certain persons are dazzled by the handles attached to some, and feel flattered at the opportunity of being associated with them. Others, again, acknowledging their ignorance in mining matters, trust to the wisdom they assume the directors to be possessed of, instead of using their own common sense, which would stand them in better stead. They conclude that the mine must be good, otherwise so-and-so would not have gone into it, and in case of difficulties, no doubt his influence would bring them out safely.

If a business man has purchased a large interest in a mining property, it is only natural to conclude that he has carefully enquired into the matter, and is satisfied with its prospects; also that his large interest is sufficient to warrant him in accepting a seat on the board so as to assist in supervising the business of the company for his own profit; and in attending to his own affairs he, if honest, also promotes the interests of his associates. Unfortunately, however, directors are not always such as is sketched above; there are some who sell their names with the usual accompaniments without the slightest intention of performing the duties that are expected from them; they are simply figure heads, and their names are used as decoys for those who do not think for themselves, but take state-

ments for granted on the strength of another's name. One can hardly expect a man who is given shares in a company for the sake of his name, to have the same lively interest in its welfare as a man who has invested his hard earned savings in it. We cannot pretend to know the true reasons that influence a director to take certain steps, and unless one is behind the scenes, it is difficult to judge of the motives of the guiding hand. He may take advantage of early news received officially from the mine to instruct his agents to buy or sell as the case may be before the rest of the shareholders are given an opportunity, forgetting that he is representing others as well as himself; or he may be a professional guinea-pig, who attends as many meetings as possible in the day so as to qualify for his fee, caring little or nothing how he scamps through his work, so long as the formality is got through. We cannot condemn too much those men who accept fees with no intention of fulfilling the duties their position requires of them, and which their friends and the public, who joined on the strength of their personality, naturally expect. It is not desired by any means to run down professional directors as long as they do not belong to so many companies that they are unable to pay proper attention to their business. On the contrary, there are many advantages in obtaining the services of the right sort of professional director, for they can give new companies the benefit of their experiences gained elsewhere, and their knowledge is handed on to others who are graduating for professional directors themselves. A labourer is worthy of his hire, whether he works with his head or hands, so it is only fair that a director should be paid for his trouble, besides which, it acts as an incentive to close application to the interests of his company.

The ideas that emanate from the brains of some directors are as annoying to the harassed mine manager as they are absurd, for example, the English directors of a South African mine, in reply to their manager, who wrote to say that a new shaft was necessary, which he estimated would cost £500, said they thought the price was exorbitant, and enquired if he could not buy a second-hand one at a less figure! Or, again, a Victorian mine manager, after well testing a reef, wrote to his directors informing them that the mine was a duffer, the reef being only three inches wide containing hardly any gold, so he recommended them to close the mine, and divide what balance was left among the shareholders. Well, one director, who had also been a vendor, was very vexed, and plainly said he suspected the manager of wishing to depreciate the property, so that he could secure it cheaply for himself, and offered to visit the mine to see how matters stood. On his return the director reported that things were just as he expected, that the reef was looking well, and was six feet six inches wide, the whole length of the tunnel. The manager was naturally asked for an explanation, which was to the effect that what he had previously stated was quite true; that the director had arrived with the intention of teaching him his business, which he commenced to do by measuring the depth of the reef exposed to view in the face of the drive, which he had mistaken for its width, which still remained three inches of "buck quartz." Similar absurd mistakes were made in the early days of Victorian reefing, when, men hearing that gold was found in quartz, thought it referred to a measure, and so started for the gold fields with buckets and pans, being under the impression that they could pick up the precious metal like periwinkles on the seashore.

Some directors are as bad as old women at auction rooms, as far as buying up all sorts of unnecessary and useless machinery is concerned, which they send on to the mines. I remember once having the misfortune of being employed by a company whose directorate was given that way, and I do not desire a similar experience; they, moreover, were under the impression that they understood more about the technicalities of the work than their manager, and it was only by accident if the original orders were attended to. If double tape fuse was ordered they would send up single, because it was cheaper, and they considered the former extravagant; the time lost over misfires did not count for money with these directors. Did you desire powder or dynamite, you would receive some new fangled explosive for an experiment, the range of which you would have to find out, accompanied with the usual difficulties one has in getting an ordinary miner to adopt something he is unaccustomed to. There is a certain mineral property I have in my mind's eye where the managing director, formerly a wholesale butcher, and the mine manager, who was by trade a fitter, put their heads together over a second-hand volume of "Phillip's Elements of Metallurgy," from the study of which they decided to erect a furnace for treating copper ore that was originally designed for smelting iron. In due course the plant was finished and the furnace put in blast, but unfortunately the mine manager, a very worthy and hard-working man, had never seen any smelting done, so it was hardly surprising when before twenty-four hours had passed the furnace was choked up, the crucible was chilled, and all the heat was at the mouth of the furnace. Of the little matte and slag that was tapped, the former was thrown over the tip—now carefully covered up—while the slag was bagged for shipment home. So long as people have such a confusion of ideas that they cannot distinguish between an engine-driver or fitter and an engineer, or between an apothecary or druggist and a chemist, we will continue to have the wrong people in the wrong places.

(To be continued.)

GOLD DISCOVERY NEAR BARMEDMAN, N.S.W.—A report has reached the New South Wales Minister for Mines from the Warden's office at Barmedman, in regard to the discoveries of gold on Wyalong, No. 1 station, 20 miles away in a north-westerly direction. The find was made towards the middle of last month by Fred Neild and party, who obtained from ½ ounce to 2 ounces of gold to the ton by mortar treatment before reporting to the Warden. The whole surface of the country is almost level, and is densely timbered with scrub and mallee. The soil is of a first class agricultural description. Under the subsoil is a bed of soft decomposed diorite similar to what is found on the eastern side of the Temora gold field. There are little or no indications of reefs on the surface, nothing but a few scattered stones. The prospectors happening to pick up and break a small stone led to the discovery of gold in the first instance, and in nearly every case the sinking down a few feet has resulted in striking leaders carrying, as far as could be judged, payable gold. Sufficient work has not yet been done to test the value of the discovery, or prove whether the leaders will make into reefs when further sunk upon. The quarts is of a hard nature, highly charged with iron pyrites. As nearly all the parties who have gone out have found gold in the surface stones away from the first discoveries, it seems probable that a rush will set in, as the surface indications are so good; and the ground being very inexpensive to work, profitable employment will probably be found for a considerable number of miners. The proprietor's shaft is down about 17 feet. This shows at the bottom about 2 feet of stone on the north side and 1 foot going south. The gold is mostly fine. The other reefs only show from 2 inches to 3 inches to about 8 inches of stone. There are no clearly defined walls. With reference to this report the Minister has decided that the Chief Inspector of Mines (Mr. Sloe) shall visit the field as soon as possible to fix [illegible] and generally report upon the discovery.—*Australian Mining Standard.*

SOCIETY OF ENGINEERS.*

MEETING AT WESTMINSTER.

THE first ordinary meeting of the Society of Engineers for the present year was held on Monday evening last, at the Town Hall, Westminster. Mr. W. A. MCINTOSH VALON, J.P., the President for 1893, first occupied the Chair, and presented the premiums awarded for papers read during his year of office, viz.:—The President's gold medal to Professor V. B. Lewes for his paper on "Gas Substitutes;" the "Bessemer Premium" to Mr. R. Nelson Boyd for his paper on "Collieries and Colliery Engineering;" a "Society's Premium" to Mr. E. G. Mawbey for his paper on the "Leicester Main Drainage, &c.;" and "Society's Premium" to Mr. Robert Carey for his paper on "Hydraulic Lifts."

Mr. VALON introduced the President for the present year, Mr. George A. Goodwin, to the meeting, and retired from the Chair, receiving a hearty and unanimous vote of thanks for his services during the past year.

The PRESIDENT having taken the chair, prefaced his address by referring to the satisfactory progress and condition of the society, stating that its position was better than it had ever been, and that its *raison d'être* was a worthy and a much appreciated one—viz, to hold out a helping hand to the younger members of the profession, to offer them special inducements in taking part in the discussions on the papers read at the monthly meetings, and arranging for the annual summer visits to works of engineering interest under construction or completed, where again, useful information was obtained, and of special value to the younger members. After referring to last year's visits, and the work of the society, he commenced his address proper, which dealt with the present position and practice of mechanical engineering. Boilers being the most usual form of apparatus whereby motive power is obtained to put all machinery in motion, he naturally dealt with them first, pointing out rapidly the growth up to the present types—viz., Lancashire, Galloway, marine, locomotive, and water tube, &c., and mentioned the chief points in each, both in construction and working, recommending mild steel of a certain quality and properly tested for strength, ductility and temper. Feed heaters were touched upon and their great advantages pointed out, the live steam type being particularly referred to, as also the probable reasons for its efficiency. Mechanical stoking was described under two heads, viz., sprinklers and coking, the latter of which he considered gave more perfect combustion. The smoke nuisance was then discussed and suggestions thrown out for its abatement, the ordinary household grates being responsible for 95 per cent. of that due to the 4000 tons of fuel burnt daily in London alone, giving probably 3000 tons of carbon thrown into the atmosphere. Steam engines came next in order, and after describing the probable first application of heat to doing work 2100 years ago—when the doors of temples were opened and shut by the placing or removal of fire on an altar—some of the various forms of engines and valve gears were mentioned; efficiencies, both thermal and mechanical were alluded to, and examples of the best results were given; for the former 12·05 lbs. of water per 1 h.p. having been reached, while 94 per cent. for efficiency. Many improvements made in recent years in internally fired engines, culminating in the use of ignition tubes, self-starters, better thermal efficiency, and larger powers were described. Questions such as late ignitions, scavenging, varying explosive charges as against cutting out, coupled engines and compounding were discussed as far as time would allow. Single cylinder engines were now made up to 160 i.h.p., while multiple went as high as 600. The consumption of gas had been reduced to 15 cubic feet per h.p., while 10 lbs. is stated to have been reached, which, if worked by Dowson gas, only represented ·8 lbs. of coal per h.p. per hour. Mechanical efficiency of these engines could be taken as 80 to 85 per cent. at full power. While in 1860 the thermal efficiency was only 4 per cent., it was now 26 per cent. As an example of high running powers of gas engines, the President referred to an engine he had seen where 800 explosions took place per minute, *e.g.*, 1600 revolutions. With regard to oil engines, their action was described and results of tests carried out by reliable engineers referred to; the largest engine yet made being 90 h.p. Marine engineering was fully commented on, the first steamer of the P. and O., 1829, of 206 tons and 6½ knots speed, and some of the Atlantic Liners being those chosen as a basis for review. It was mentioned that while 1 ton of coal in the *Iberia*, 1837, propelled, 17 tons, 221 miles a day, 1 ton in the *Campania*, 1893, propels 28·8 tons, 601 miles in the same time; also that in the former 5·6 lbs of coal were used per i.h.p per hour, the latter only required 1·5 lbs., while 1·17 lbs. had been reached in another vessel. The President then fully dealt with artificial draught, but chiefly Howden's Forced and Ellis-Eaves Induced, and gave results of working, whereby it appeared that with either the power of the boiler can be doubled with safety, as much as 22 i.h.p. being obtained for each square foot of fire grate, so that space is saved, and cargo carrying capacity increased, less firemen required, and an inferior coal could be used. The advantages and disadvantages of each were commented upon, the former, however, he considered favoured the Ellis-Eaves. Its application to land boilers, and central power stations was also dilated upon. The speaker passed on to describe the chief details in connection with the system—viz., rails and fastenings, including the permanent security of the keys, which had never yet received much attention, style of carriages, carriage lighting, and heating, locomotives, and their developments, including compounding and use of liquid fuel, variable blast pipes, and test for tyres and axles. A review of iron and steel manufacture was next given, pointing out where developments had taken place in heating, handling, and output. Electricity followed on, and references were made to its various applications, including that for printing the daily and weekly papers when power was only required for short periods per day, saving initial outlay, space, attendants, and firing up losses. Suggestions were also made that electric light companies should sell current for power purposes at any time of day or night at a reduced charge. Electric cable and steam traction was then reviewed, as also the particulars of the systems or costs of working. Water power and dredging plants of modern design were described, and, lastly, a short statement of refrigerating machinery developments was gone into. In conclusion, the speaker offered a few words of advice to the younger members who had elected to follow the profession of an engineer, recommending a sound practical training by day with theoretical study in evenings; to follow up some speciality to the hilt, but at the same time to obtain and maintain a good general knowledge of other branches, and concluded by quoting the words of Francis Bacon—"I hold every man a debtor to his profession; from the which as men of course do seek to receive countenance and profit, so ought they of duty to endeavour themselves by way of amends to be a help and ornament thereunto."

Shortly afterwards the proceedings terminated.

[* *Communicated.*]

SPONTANEOUS COMBUSTION IN COAL MINES.

PAPER BY W. S. GRESLEY.

MR. W. S. GRESLEY submitted to a recent meeting of the Federated Institution of Mining Engineers an interesting paper on "Spontaneous Combustion in Coal Mines."

The writer, though now resident in the United States, was engaged for many years in the Leicestershire and South Derbyshire coal-field, and had some experience of gob-fires there, especially in the main seam. In regard to wax walls and clay dabbing, there are at least two objections to their use. First, unless constantly attended to they dry, shrink, and crack, and let air in through them; secondly, mice and rats bore holes through them in order to get access to the gobs, or to escape being buried alive in the wastes, causing a further source of leakage of air through the wax walls. When kept damp and free from cracks through them they are efficient, but to do this requires that all parts of them should be accessible at all times, and causes great additional cost. In working the main coal of this coal field, fire stink would sometimes (though rarely) appear in cracks or open joints in the floor coal, which was not raised, between the hauling roads and the air-courses driven in this floor-coal under or a little on one side of the gobs; at other times gob fires arose in small heaps of slack by the roadside, or even inside the gobs at points where stalls or longwall working faces were opened off from the edges of shaft or other pillars. Sometimes there were no stinks until the roof coals and shales broke down in the wastes, when working on the improved system of longwall-withdrawing. This method of working the main seam proved very beneficial, and was adopted by the late Mr. J. T. Woodhouse about 1862, at the Oakthorpe Pit, Derbyshire. There was an almost entire cessation of gob fires, the only times when fire stink appeared being during prolonged stoppages of the face due to dull trade, strikes, &c., but on resuming work these stinks were soon smothered and left behind in the gobs. The change of system also very much reduced the temperature of the pit, besides benefiting the ventilation in no small degree, and the consumption of prop wood was also very considerably reduced. In the United States, notwithstanding almost every grade or variety of coal, from graphitic anthracite to bituminous coal (including cannel) being mined from Rhode Island on the east to the State of Indiana in the west, a distance of some 1150 miles, and that almost every variety of method of working (especially room and pillar) is practised, such offering every facility for creating gob-fires, the writer has not yet met with, heard of, or read of a single instance of a *bona fide* case of spontaneous combustion of coal in a mine. This observation applies to the coal regions of the Northern States and to West Virginia. Whether they have gob fires in the other Southern States of the Appalachian coal field or not he cannot say.

Now, this fact, if true, is somewhat remarkable. In Illinois gob-fires do occur, both in the north and the south of that coal region. They often give trouble in Iowa, too, and how much farther west of the Mississippi river the writer does not know. In northern Illinois, at the Spring Valley Mines, in Bureau County, 105 miles west of Chicago, gob-fires do not make their appearance unless there is a lengthy stoppage or shut down of the workings due to a strike. The seam in question is the lowest but one in the coal measures, being about 3½ feet thick, with a bastard fire clay floor and a soft shale roof. The thickness of the coal is wonderfully uniform, and apparently without a break or fault of any extent over tens of thousands of acres. The coal in burning emits much smoke, and it contains considerable iron pyrites in hard nodular patches as well as in the laminæ or bedding-planes. Chemical analyses give from 11 to 12 per cent. of moisture. The coal is non-caking. It is worked on the gob-road longwall system entirely, keeping the working-faces as near as practicable in a circle all round the shaft and shaft pillar, the seam lying practically dead level. The workings are quite dry, being 350 feet to 500 feet deep, but salt water shows itself in the floor when holes are excavated 3 or 4 feet deep in it. Closing the mines during long strikes in 1889 and 1891 caused the caving-in of many of the haulage-ways, air-courses, and faces, thus stagnating and even blocking off the ventilative-currents in some portions of the pits. When the falls came to be cleaned up and the ventilation restored the workings were intensely hot, but no fire was found. However, some months afterwards gob-heat and fires developed themselves in the gobs between the pack walls in several places in one or two of the pits, giving some little trouble at the time. The peculiar feature about these fires was that they all occurred just about on the line of the old faces at the time these were abandoned when the men came out on strike. This circumstance would seem to show that the burying or gobbing of the slack and broken coal which was necessary in reopening the faces, caused the mischief—coal in lumps, slack, pyrites, clay, and shale would then all be shovelled back into the wastes together, and being more or less decomposed from exposure would doubtless favour heating, which ultimately resulted in red-hot gobs.

Since these strikes the pits have worked steadily and there have been no more fires or even fire-stinks, notwithstanding the fans are reversed from exhausting to blowing in midwinter, when it is too cold for the men and mules working at the pit bottoms and on the intakes airways. It is true the pack walls are now put in more substantially than heretofore, and much less debris is raised to the surface. In southern Illinois they got gob-fires in pillar-and-stall working, but under what conditions the writer does not know. In Iowa, railway embankments, largely made of unsaleable screenings, have taken fire spontaneously, and given a lot of trouble. Iowa coals probably contain quite as much if not more moisture than the coals of Illinois, and the Iowa coals do not cake. The percentage of water or moisture in a coal has a close connection with the question of its capacity for spontaneous combustion. The following facts and references seem to merit close attention by chemists and those interested in the question. The semi-lignitic aspect of the Illinois coals closely resembles the coal of Brora, in Sutherlandshire, a particularly troublesome seam to work on account of gob-fires. The large percentages of water contained in the coal of the Central United States field ranging from 3 to 12 per cent., the latter being the more common. In New Zealand, Mr. G. Binns says, many of the coal beds run high in moisture, ranging from 16 to 20 per cent., and it is well known that spontaneous combustion occurs in some of the New Zealand coal mines. Mr. Joel Settle did not inform us, in his paper on North Staffordshire gob-fires, whether it was the coking or the other kind of coal of the bull-hurst seam that caused the trouble; and the writer believes that seams of good coking coal or a good gas-coal are not of a gob-firing character.

Professor Richters has shown conclusively that the coals most liable to spontaneous ignition are not those which contain most pyrites, but that this property is principally due to the atmospheric oxidation of the organic substance of the coal. There is no question but that burning gob-piles on the surface

have a great affinity for moisture, which blaze and burn more brightly on wet and stormy nights than during calm and dry weather. The wet interiors of haystacks grow hot, dry ones never. Manure heaps which are moist often become heated. The writer has heard mine foremen say, "If you want to start a fire in this pit, throw some water over a heap of slack and scatter a few shovelfuls of mining dirt (clay) upon it, and you'll soon have it on fire." What, therefore, is the precise connection between a coal containing a high percentage of moisture and its proneness to take fire spontaneously? Is it the extra quantity of oxygen therein, or what?

MEETINGS OF MINING COMPANIES.

POLBERRO MINE COMPANY.

Call of 1s. per share.—Encouraging prospects.

A SIXTEEN WEEKLY meeting of shareholders in Polberro Mine Company was held in the account house on the mine at St. Agnes, Cornwall, on Friday, the 9th inst., Mr. JOHN B. REYNOLDS, Chairman of the company, presiding.

The statement of account from October 19, 1893, to February 6, 1894 (and which had been duly audited and certified by Mr. A. Gostick) showed:—Receipts, arrears of call of June 30, 1893, £1 17s. 6d.; call of 1s. per share on 18,000 shares made on October 23, 1893 (less £2 on 40 forfeited shares and £10 10s. arrears of call), £887 10s.; 1 ton 0 cwt. 0 qr. 10 lbs. of black tin at £40 per ton and 3s. 4d. carriage, £40 6s. 11d.; discounts from merchants, £4 0s. 4d.; total receipts, £933 14s. 9d. The expenditure had been:—By balance from last account, £166 13s. 2d.; labour costs, £547 5s. 10d.; merchants' and other bills, £207 6s. 7d.; minimum rent (less income tax), £19 9s. 2d.; bankers' charges (interest, postage, &c.), £10 13s. 1d. The total expenditure was £951 7s. 10d., leaving a balance of £17 13s. 1d. due to bankers. Excepting this balance, there were no liabilities due and unpaid. The balance of liabilities over assets was £7 3s. 1d.

The CHAIRMAN: With reference to this statement of accounts, the adoption of which, together with the agents' report, I shall presently move, it is right I should say that since these accounts were made up the sum of £9 10s. 0d. has been paid to the bankers, reducing the arrears of call to £1. That £1 is due from a shareholder who apparently has forgotten to give notice of his change of address to the secretary of the company, and we do not know consequently where to find him. Probably we shall be informed before long where he has gone. The committee have considered the case, and have decided that, under the special circumstances, it would be well not to forfeit those shares. Strictly speaking, of course, we ought to forfeit them; but the case is altogether exceptional, and inasmuch as the shares are valuable we thought that the shareholders would not like to proceed harshly in the matter.

The MANAGER (Captain Charles Thomas) then read the following agents' report dated February 9, and signed by himself and Captain John Harper,

> The 26 fathom level has been driven 33 fathoms east of crosscut and 27 fathoms west of crosscut on the Pink lode, making 60 fathoms opened on the lode at this level, of which distance 24 fathoms have been driven since last meeting. The lode in the eastern end is 4 to 5 feet in width, and for the last 8 fathoms driven has averaged 16 lbs of tin to the ton. This end is about 40 fathoms short of the large crosscourse, in the neighbourhood of which all the lodes of the district have proved productive. About 30 fathoms east of the crosscourse, and at shallow depths the Pink lode yielded large quantities of tin. There is every reason, therefore, to expect the 26 east to open up profitable ground. The 26 west has been driven on a very productive lode of late, the last 5 fathoms having averaged 74 lbs. tin to the ton. (Applause.) The lode in the present end is of the same character and value, and is worth £15 per fathom for the width carried—about 6 feet. (Applause.) The 26 cross cut is driven 27 fathoms north of Pink lode. We have of late driven through several small branches which yield tin, and from this we judge that we must be near the South House lode. The 20 west on the junction of the Pink and Callow lodes has been driven 5 fathoms in a kindly lode, yielding occasional stones of both tin and copper ore. We fully expect this end to improve in driving west, when it gets over the run of ground recently driven through in the 26 west, and should our expectations in this direction be realised we shall open up a good section of stoping ground. (Applause.) With regard to the working of the mine in the immediate future we are of opinion that it will be necessary to see the exact position of the South House lode at the 26, so as to form an idea of the depth at which that lode will intersect the Pink lode, and to drive the 20 and 26 levels further west to ascertain the extent of the tin ground discovered westwards before we lay down any definite scheme for permanently developing the mine. (Applause.)

Captain CHARLES THOMAS: That report is a great improvement on the last. I would say, speaking on the report, that in the 26 fathom level east lately—you will find on the table some very good stones of tin from that end—we have had some branches varying from 3 to 4 inches wide, with very rich tin. The produce has been as high as 22 lbs. of tin to the ton of stuff, but taking an average of 5 fathoms the produce is 16 lbs. to the ton. That end is now being driven by six men as rapidly as possible. The lode is well defined and from 4 to 5 feet wide. There is a very fair prospect of meeting with an improvement in that end very shortly. In the 26 end west there is a little crosscourse about 15 fathoms to the west of the present end. The end during the last five fathoms has yielded 74 lbs. of tin to the ton of stuff. We think there is every chance of this end continuing. We want to push on the level as rapidly as possible to see the junction of the Callow and Pink lodes at the crosscourse before us and to see whether this lode will continue. If it does that will be a very important feature in connection with the mine. The 26 crosscut is driven 27 fathoms north of Pink lode and during the last few days we have had stones of tin and copper and sulphurous mundic and very nice branches of tin in the end. Speaking generally, I believe throughout the county it is acknowledged by all miners that such indications in the country rock are considered very important as showing that we might cut the lode in a fathom or two driving. (Applause.) There is no doubt in the world that we shall reach the lode by driving some two or three fathoms, and seeing the branches and indications in the end, I think we may fairly calculate on meeting something good there. (Applause,) The stones you see on the table speak for themselves. Seeing the result achieved in the 26 west we went to the 20 on the junction of the Callow and Pink lodes and started a pare of men there driving west. We are in 5 fathoms. The ground is moderately easy for driving and in driving about 12 or 15 fathoms more we shall get back to the same point where we reached the tin in the 26, and where we hope the tin has gone up in the back. We shall then communicate from the 26 to the 20, which will leave 10 fathoms of backs, ventilate the western end and lay open some good ground for stoping. (Applause.) The point is a very important one. We are setting the whole of these bargains by contract, and the men are working very well. As agents we are very pleased with the appearance of the mine at present. A continuation of our present state and condition will lead us into a very good mine, and we see no reason why the improvement should not continue. (Applause,) There is one other point I should like to touch on. We have sold about £40 worth of tin, and we have at surface about £50 worth. (Applause.) During the first two months we had very little water, and only three heads of stamps. Now we have plenty of water and six heads of stamps. (Applause.)

The CHAIRMAN: In moving the adoption of this statement of accounts and the agents' report allow me to assure you what pleasure it gives me to see you this morning, and to welcome so many of you at this meeting. I need hardly say that the members of the committee are working most harmoniously and heartily together, having done their very utmost in the interests of the company during the past four months, and I think you will agree with me that their efforts have been crowned with very considerable success, (Applause.) You must bear in mind that it was no longer ago than about two months since they met with this important improvement in the western end, so that they have only been working on the tin ground for about two months, and they have confined their operations entirely to driving. You will judge for yourselves as to their moderation in valuing the points by the fact that they have raised from these drivages—for all practical purposes we may say that—tin amounting to nearly £100. (Applause.) Now that is a very significant fact. Of course the amount may not appear very important to many outsiders, but I assure you, gentlemen, it appears very important to me. (Applause.) And it is significant, I think, in favour of our meeting with a very considerable run of tin ground westward, for you must bear in mind that we have no less than 250 fathoms of ground between our present end and our western boundary—(applause)—so that the probability is that in that direction alone we shall open up a mine of very considerable importance. (Applause.) Then you have heard of the prospects in the north crosscut. I am very glad to notice that Captain Charles Thomas is so very guarded in all his utterances, and I know he might have said more if he had given full vent to his real feeling with regard to our prospects in that crosscut. (Applause.) But in the present day, especially when we are so accustomed to exaggerated statements, not in Cornish mining companies—(hear, hear)—but in other companies which are not worthy to be mentioned in connection with Cornish mining companies, where exaggerated statements are made so freely it is well for us to be very guarded in our utterances when we are dealing with the affairs of a company of this kind. (Hear, hear.) Then our prospects going east are very excellent indeed, and I daresay that before we meet again we shall report a good end in that direction. Well, taking into consideration the real prospects of our property it must appear, I think, to any dispassionate observer that our prospects are simply splendid. (Applause.) That is the word, and I will use it with all possible deliberation and emphasis, and I will say that our prospects are splendid, and it gives me very great pleasure to be able to say that (Applause.) Of course, gentlemen, we are going to extend our operations, but we shall extend our operations prudently and without taxing, I hope, the pockets of the shareholders. (Applause). That is our object. We are favoured with the confidence of a very influential and powerful company—(applause)—and we will take care not to abuse that confidence which is so freely reposed in us. (Hear, hear.) I might say very much more about the mine generally, and the district, and the rest of it, and I might expose the fallacy which gains credence in the minds of some as to this being a bunchy district, and that kind of nonsense, but I shall not do so. I will not detain you. I am sorry that any man should try to decry any mining property in times like the present. (Applause.) These are times, gentlemen, when we ought to say every thing good we can say concerning Cornish mining—(applause)—and we ought, I think, to be silent about all doubtful que tions until those questions have been fairly tested. (Applause.) Now turning to the statement of accounts, I may say I never saw a more creditable one presented to any meeting of shareholders. (Applause.) There is no fear of our having a writ from Messrs. Bolitho—(laughter and applause)—as has been suggested, for £8 3s. 1d. (Continued laughter.) That to-day is the only money that is due to anybody by this company in the world. (Applause,) £8 3s. 1d. is due to-day to Messrs. Bolitho and Company, and out of that has to come the £1 arrears of call to which reference has been made, and with regard to which I am sure under our present circumstances and under the exceptional circumstances of the gentleman that is a debt you will not deal with. (Hear, hear.) We are very strict in the collection of calls. We cannot allow any arrears, gentlemen we will not allow any arrears. (Applause.) It is unfair for any man to hold on shares in a mining company of this kind unless he promptly pays up his calls. If he cannot afford to pay his calls, he ought to disconnect himself from the company. (Hear, hear.) That is my view, but whatever my view may be we cannot legally give credit, we cannot legally give time, for we say to the public that we neither give nor take credit, and we must, therefore, keep faith with the public. I do not know that I have any further observations to make at present, and I will simply conclude by congratulating you again, and I do so with very great heartiness and pleasure, on what I believe to be the splendid prospects before this company. (Applause.) Perhaps I might say a word before concluding, with regard to the tin market. Gentlemen, we who have been a long time engaged in business in the city of London are accustomed to panics. The fact is that some of us like panics very much, because it enables us to buy at such prices as are sure to be highly remunerative to us. We think that we have a right to live, and without panics it would be very difficult indeed for some of us to exist. Out of this panic in tin we shall make money no doubt, not by selling our shares in mines, nor by selling tin, but by buying shares in mines and by buying tin. That is the way, gentlemen, we shall endeavour to make money out of this particular panic. We observe exactly the same line of conduct when there is a panic in stocks on the Stock Exchange. We are not frightened into selling, but we quietly take up as much stock as we can get the money to pay for. I said at the West Kitty meeting, and I say again to-day, that although the immediate outlook for tin may not be very bright, may, in fact, be rather gloomy, (I understand a further fall has been reported to-day) yet I have no more doubt than I have of my existence that tin will right itself again, and the persons who to-day are looking very anxious, will before long meet together with smiling countenances, and reap their reward in a higher and more satisfactory price. (Applause.) We all hope that day may be soon at hand; you may depend upon it everything here is going on well. We have no ground whatever for despondency or discontent. Let us all be hopeful, as the Cornish people indeed are. I may say I look with a great deal of admiration on Cornish shareholders at the present moment when I see that, in spite of the heavy fall in tin, Dolcoath shares, for instance, stand at the splendid price of £70—(applause)—and when I see the other mines keeping up so well, and the shares in this company gradually rising and increasing in public favour, when I see all this, I am proud of shareholders in Cornish mines, and I can only hope they will resolutely stick to their holdings all round. I am not referring to this mine alone, but to holders in the big mines of the county such as Dolcoath, Tincroft, Carn Brea, Grenville, and other mines, and I can only express the most fervent hope that they will continue to stick to those valuable shares, and that they will do what they can to increase their holdings. (Hear, hear.) Gentlemen, anything I can do in my humble and limited way for Cornish mining, I shall be very glad to do. (Applause). I have it in contemplation to start other mines in this particular district, to which, of course, I am obliged to confine my attention, and I shall congratulate myself on being surrounded by men who are so able in the discharge of their duty as those gentlemen with whom I am happy enough to be associated. Gentlemen, I am entirely satisfied with the local management of West Kitty and Polberro. (Applause.) I never knew mines more creditably, ably, and more honestly managed in my life. (Applause.)

Mr. G. COULTER HANCOCK, C.C.: I beg to second the proposition I intended to have made some remarks with regard to the mine and the prospect, but it appears to me, Sir, you and the manager have gone over the whole of the ground that I could have worked upon. As regards the accounts, they are in a most satisfactory state. (Applause.) The arrears of call as you see are set down at £10 10s., but since the accounts have been printed £9 10s. has been paid, leaving only £1 in arrears. I wish all the mines in the neighbourhood were in a similar position. (Hear, hear.) For the credit of Cornish mining this "no credit" system should be adopted generally in mines. You have heard me say Mr. Chairman, on many occasions that Polberro is a pet scheme of mine. I know the property well and the prospects at the present moment are brighter than they have ever been before. (Applause.) In driving the crosscut north, we hope we are within measurable distance of finding something, which will no doubt be very valuable. (Applause.) The indications at the present moment which are shown by the stones on the table are certainly very encouraging. I should not be surprised if during next month we did not get into a rich course of tin, and if we do the price of the shares instead of being counted by shillings would probably be counted by pounds. (Applause.) It was one of Captain Charles Thomas's pet schemes to drive west at the 26. (Captain C. THOMAS: Quite right.) We in St. Agnes never had an opinion that going west was so good as going east. Captain C. Thomas from the first always said "Let us try west," and he has persistently done so, and in doing so, he has in my opinion opened up a valuable piece of tin ground. (Applause.)

The CHAIRMAN: Now the time has come for the conversation or questions. Perhaps some gentlemen would like to put questions. We are here to answer them. I ought to have alluded to the little item of forfeited shares in the statement of accounts. These shares were forfeited some time ago when the shares were not very valuable, and we do not propose to deal with them at all at present, as they are becoming of greater value. Perhaps the time may come when we may be able to get a good price for them, and of codrse the proceeds will then go to the credit of the company. (Applause.)

No questions being asked, the CHAIRMAN put the motion, and it was unanimously carried.

Mr. PAYNE: Mr. Chairman, you seem to have saddled me with this piece of business again, for it is not the first time by a great many that I have proposed a call on the shareholders in this company. I propose that in order to meet the requirements of the company for the next three months a call of 1s. a share be made, payable on or before Friday, March 2nd. I would rather have kept my seat and have heard what others have to say, but there is one thing that induces me to say a word or two, and that is that you will be able to dispense with my services very soon in proposing these calls. I have no shadow of doubt in my own mind that these continual calls will shortly now come to an end. (Applause.) I really hope they will, because some of us have been punished a little bit in late years, and we are hoping to get a little in return very soon. I am highly pleased with the prospect before us. We have never had anything like it before, and I believe we are now on the high road to prosperity.. (Applause).

The CHAIRMAN: Perhaps, Mr. Bawden, as representing our bankers, Messrs. Bolitho and Co., will second the motion. I must say we are indebted to Mr. Bawden and his firm for the manner in which they transact this branch of the company's business. Every farthing is paid to the bank, and any receipt but that of the bankers is of no service whatever, considering that the shareholders pay their calls direct to the bank.

Mr. BAWDEN: I have much pleasure in rising to second the proposition made by Mr. Payne. It is, I think, unique the way in which the financial affairs of this company are managed, and the system carried out is highly creditable to Mr. Reynolds as the originator I suppose of the scheme, that everything should be paid direct to the bankers. My signature must be pretty well-known to most of the shareholders in connection with their receipts, and it is a pleasure to me to assist in any way in the carrying out of the financial part of the business. With reference to the mineral prospects, we were all exceedingly pleased with the encouraging words spoken by Captain Charles Thomas, who has had such great experience in mining matters. (Applause.) I have always believed myself that in Polberro we have most excellent prospects, and that given time and energy in the development of the property, sooner or later there must be a triumphant success. (Applause.)

Mr. CLINTON: I do not wish to propose any amendment, but in the resolution you state that the costs are estimated for three months, whereas a call of 1s. a share last time produced sufficient to cover four month's costs. Unless there is going to be increased costs during the next three months, considering we are raising a little tin, a call of 6d. a share might meet the cost. You are not like other mines making calls for costs already incurred; you make yours in advance.

The CHAIRMAN: Between this and the next meeting we shall have to pay at least a minimum amount of £800 in costs.

Mr. HANCOCK: That is so.

The CHAIRMAN: Perhaps the amount may exceed that and probably if we can afford it in consequence of increased receipts from tin it will. I am very much obliged to Mr. Clinton for the observations he made and perhaps he will be perfectly satisfied when I assure him that the matter has been very carefully considered by the committee this morning and in that committee meeting was the representative of some of the outside shareholders, but who was not a member of the committee, and we were unanimously of opinion that it would be wise to make a call of 1s. a share. I am the largest shareholder, and shall feel it the most, and I give it as my judgment that the decision of the committee was wise. The fact is, gentlemen, we mean business in Polberro, but at the ame time we do not mean to unduly tax any of the shareholders who repose so much confidence in us.

Mr. CHALLIS: I presume the estimate is for four months and not three.

The CHAIRMAN: We put it at three months to meet the requirements of the Act.

Mr. CLINTON: It is all very well to be wise after the event, but the law simply says you may estimate a call for three months, and assuming that you have estimated for four months some difficulty might arise.

Mr. HANCOCK: The estimate has been carefully gone into. It is an estimate for three months in accordance with the Act. We intend to spend more money in developing the property.

Mr. CLINTON: I am thoroughly satisfied with the explanation, I only wished to call attention to the matter.

The motion was then put and unanimously carried.

Mr. CHALLIS: I propose that the hearty thanks of the shareholders be presented to the committee of audit and finance for past services, and that the following do constitute such committee until the next general meeting of the company, viz.:—the Hon. Ashley, Ponsonby, Messrs. A. Strauss, W. H. P. Martin, J.P., S. Payne, G. C. Hancock, F. W. Michell, and Captains Chas. Thomas, John Harper, Joel Hooper, and John Williams. I have known some of the committee now for the past 10 years, and from my experience in having met them from time to time I can only say I am quite certain that they have given the utmost attention to the affairs of the company. They have met at times under the most discouraging circumstances, and had it not been for the exceedingly sanguine temperament of their Chairman, I am afraid some of them would have sometimes gone away with tears in their eyes. (Laughter.) It has been a difficult time, especially to the committee, and also to some of the shareholders. I may say as a small shareholder I have felt it rather severely. I commenced my connection with the company through, I may say, the advocacy and advice of our late friend Captain William Vivian. I knew him for some little time before I had much to do with the company. I came down to Cornwall and had a look round the whole of the property with him, and after what he told me it struck me that if it was true I should not be unwise in investing a little money in this company. That was 10 years ago, and I did not think that I should have been so long before I reaped the reward. Had it not been for the unfortunate mistake our late esteemed friend made, and we are all liable to mistakes, we should in 1885 or 1886 have been doing then what we are doing now. The committee who have had uphill work to do have stuck to it well under the leadership of Mr. Reynolds — (applause) — and have brought us to the position we now occupy.

Mr. CLINTON: I am pleased to second the motion, and it gave me pleasure to hear the concluding remark of the Chairman that you intend to work. I think you have every encouragement to work the mine vigorously. I have believed for many years this property is one of the gems of the St. Agnes district. (Applause.) I have known Mr. Reynolds many years, and I feel that our affairs are in very good hands.

The motion was unanimously carried.

Mr. F. W. MICHELL: Speaking on behalf of the committee, I may say we are much obliged to the meeting for re-electing and thanking us. The officials have always kept everything in such good order that the duties of the committee have been light. The time may come when, as you extend operations, the duties of your committee may be of more importance than hitherto. I know at West Kitty the duties of the committee are very different from the duties of the committee in this mine. With regard to Polberro, things are turning out exactly as I expected, and had they not so turned out I should have been disappointed. If we have not got some very good points to come off I shall be greatly disappointed. Why, £400 or £500 spent on a crosscut might discover enough mineral to sustain a mine of considerable magnitude for many years

to come. We have plenty of engine power on this mine, and th more we crosscut the better it will be. I have not the slightest doubt we have a great mine here. (Applause.) I do not think we ought to confine our operations to the driving of two or three levels, and I think it was exceedingly wise of the committee to recommend a ls. call so that we may extend our operations, because no one knows what three or four months may show in this mine. (Applause.)

Captain HARPER: If I have done anything to please the shareholders, I am very well satisfied. Our prospects have very much improved, and the western end is a very important one, seeing we are so near the Callow lode. I think it is likely this improvement will continue, and will further improve. We have got on the course of the lode something like 250 fathoms to the boundary. That is a mine in itself. The prospects east are very excellent, and judging from the extent of the work in the adjoining sett to the south of the adit level, I think we may reasonably expect to get into a run of tin ground there. The prospects in the north crosscut are beyond question. Altogether, we have had a very great improvement during the past quarter, and in my opinion we shall have a still greater one in the coming quarter. (Applause.) I am in hopes that we shall open up a good run of tin ground on the South House lode in that time, and also in the eastern end.

Captain WILLIAMS: As a member of the committee I am much obliged for the thanks you have tendered us. As Mr. Michell has stated, our duties are very light owing to the excellent way in which the officials work, but I can assure you that everything is carried out in a straightforward and proper manner. As far as the prospects of the mine are concerned I consider they were never better than at the present time. (Applause.) Three or four weeks ago I was under ground in Polberro, and I was pleased with the tin ground in the 26 west, where for 4 or 5 fathoms there is a good lode, and I consider the prospects are very good indeed in that part of the mine. I worked in this mine when a boy, and I know that scarcely anything has been done below the adit on South House lode, and round that lode considerable quantities of tin have been raised. From the adit to the surface almost the whole of the lode has been taken away from the centre of the mine right down to the eastern engine. Looking at the extent of the ground Polberro prospects were never so good as at the present time. (Applause.)

Captain HOOPER: I am very pleased to meet you to-day under these bright prospects. I agree with what has fallen from my friends on the committee that our duties have been very light, but as the mine goes on improving we shall expect to have something more to do. We are pleased to do all we can to help on the work of this company. (Hear, hear.) I was thinking whilst our friends spoke about the grand prospects before us, that now is a grand time to open up something when things around us are a bit depressed. (Hear, hear.) I know the price of tin is low at present, but in this company we are opening up ground now that will do to come away when we can get a higher figure for tin. We have some in West Kitty, but we wish to see a turn for the better, when all will be pleased and we shall be able to meet shareholders with brighter prospects than ever we have done before. (Applause.) I say when things are looking so dismal all round, it is a shame—and I do not believe in it—for people to go about crying down mining. If people cannot do us any good then let them keep their opinions to themselves, stand back and keep quiet, and not go on to public platforms or write to the papers running down the management of this, that and everything connected with the mines. Let them stand on one side, and let those who are willing to push the thing, go ahead. (Applause.)

Mr. CHALLIS: One thing I omitted to mention as an outside shareholder, and that was to say we are extremely obliged to the committee for carrying out the cash system in its purity in regard to the management of this company. (Hear, hear.) I say this as a sufferer, because it has punished me, and I know it has punished a good many outside shareholders during the last ten years to keep paying calls in Polberro and Trevaunance. However, when the good result comes it will find the mine in a better position, because we shall have no heavy debt to pay off. This system has kept this company with West Kitty and Trevaunance in the forefront of Cornish mining, and although at times it has pressed on us, still, we as outside shareholders, are indebted to the committee for adhering so strictly to the cash system. (Applause.)

The CHAIRMAN: I am much obliged for those kind remarks, and very pleased indeed that this cash system meets with the unanimous approval of the shareholders of this company and under no circumstance whatever, would any of the shareholders, so far as I know, depart from it. (Applause.) I have now a very pleasant duty to perform, and that is to move that the best thanks of the meeting be presented to the managers, Captains Thomas and Harper, for the way in which they have managed the affairs of the mine. I will couple with them, if you please, the name of my excellent friend and colleague Mr. Hancock, who is always unremitting in his attention to the matters of the company, and who has the courage of his convictions, and who is certainly not afraid to speak out his mind concerning the prospects of the mine. It was a most fortunate day on which we resolved to appoint Captain Charles Thomas manager of this mine. (Applause.) It was a most fortunate day also when we resolved to appoint Captain Harper as the other agent. With regard to Captain Harper I may say we are indebted to my excellent friend Mr. Hancock, and with regard to Captain Thomas I may take the credit to myself, although I was sustained by everybody whom I consulted on the matter. I do not take advantage of the large holding I have in this mine to press my own particular views either as to manager, officials, or otherwise, but I am guided by the views of the general body of shareholders. I feel they have to be consulted on all points, and I do so consult them, as I am able, accordingly. Applause.)

Mr. N. B BULLEN: It gives me great pleasure to second the resolution. I must congratulate you, Sir, and the adventurers present on the improved prospects of this mine to-day. (Applause.) I have known Polberro for a great number of years. I recollect Polberro 30 years ago, when her affairs were under the guidance and direction of Captain Hancock, who was a most worthy man. I heard him say often that if tin was to be found anywhere in the district it would be found in Polberro Mine, and it appears to me that tin in quantities will be found here very soon. I entirely approve of what Captain Hooper said—develop your mine now when things are low, and you will have the benefit by-and-bye. You can depend upon it that after the storm comes fine weather. The year 1893 has proved a disastrous one all over the world. I congratulate you on having as manager a man like Captain Chas. Thomas, whom every one in West Cornwall so highly respects. (Hear, hear,) As a shareholder in Cook's Kitchen my firm are prepared to stick to Captain Chas. Thomas as long as he lives. (Hear, hear,) Captain Harper possesses great ability as a miner, and in Mr. Hancock we have a gentleman who speaks what he feels, and who looks thoroughly after the interests of the company.

Mr. S. PAYNE: I should like to support the motion because I feel if any mine in Cornwall has the right men in the right place it is Polberro. (Applause).

The motion having been carried,

Captain CHAS THOMAS: I thank you for the confidence you have placed in us. I will only say one word, and that is this, I always feel a pleasure in coming here to meet Mr. Hancock and Captain Harper. (Hear, hear.) We have never had an angry word in any way whatever, and we consult each other on the best way to work the mine. (Hear, hear). I am always pleased to see Captain Harper, who is a very good agent and who has proved himself to be of great assistance in working and developing the mine. (Applause).

A vote of thanks to the Chairman, proposed by Mr. BAWDEN and seconded by Mr. CHALLIS, concluded the business of the meeting.

After Dinner Speeches.

Subsequently the adventurers dined at Paull's Hotel, St. Agnes. After the toast of "The Queen,"

The CHAIRMAN said: I will now give you the toast of "Success to Polberro." One thing is very certain, Captain Thomas, and that is if it had not been for these account dinners a lot of mines which have been very profitably worked in Cornwall would never have been brought into a dividend paying condition at all. I suppose, therefore, the best plan for a calling mine to adopt is to always have a luncheon after the making of a call. (Laughter.) I do not know how it is, but somehow or other we are more cheerful after dinner than we are before, probably the effect of the meal is stimulating. It gives me very great joy to sit down to a meal with those in whom I have confidence, and whose companionship I like. I think that is a very right feeling. With regard to Polberro we are met to-day under very cheering circumstances, to say the least of it. (Hear, hear.) We have had a most agreeable shareholders' meeting, and I think the business we have transacted has been business wisely transacted, and I think we are justified, and more than justified, in saying all that we have said to-day respecting this mine. I remember attending in this place, on this very spot, some 14 years ago, when West Kitty was just in a similar position as that occupied by Polberro at this moment. We had made a discovery, we were driving on a level with all possible speed, and I told the very limited number of shareholders we had then that when we began to declare dividends we should go on declaring them, and we should not declare any dividends until we saw our way to continue them. (Applause.) What I said then with regard to West Kitty I say to-day with regard to Polberro—we shall not begin to declare dividends until we see our way to continue them. (Applause.) And, gentlemen, it is right we should remember, I think, that we have a good deal of work to do before we shall divide profits. (Applause.) If the policy is adopted which I know is in the mind of Captain Thomas, his anxiety is to lay out a permanent mine of very great value, and in order to do this and to safeguard the interest and convenience of the shareholders he is wishing to proceed cautiously as well as spiritedly. Now, undoubtedly, we have a splendid chance on the western ground. I do not think Captain Thomas can overrate the importance of the work we are now doing as far as the St. Agnes district is concerned. When you come to consider that we have 250 fathoms between the western end and the western boundary—(Captain CHARLES THOMAS: 250)—250, you will remember how important the matter is, and I cannot wonder for a moment that the good people of St. Agnes should watch our proceedings with not only very great interest, but with very great anxiety. So far we have no reason to doubt as to the result of our operations towards the crosscourse ahead of us—about 15 fathoms. We have every reason to believe that the tin will make up to that crosscourse, and, of course, on the other side of it it is likely to be equally productive. It is true, I think, that whatever Captain Thomas may have thought, other people thought our chances going west were not so good as they are going east, but it appears so far as we have gone our chances going west are better than our chances going east. That is how it strikes me, but at the same time I am not a practical miner, and I hold to the opinion of those who think that our chances going east are about equal to our chances going west, but I think also that Mr. Challis is right in thinking one of the main features at all events in Polberro is this crosscut going north, and there, I think, as was stated at the meeting our chances are everything that we could possibly desire. (Applause.) I do not know that we can desire any better prospect than we have there. Still if we are fortunate enough to get either one of those two points as successfully as the western point, gentlemen, I suppose we shall be very clever fellows. (Laughter.) If by any chance we fail, well then I suppose we shall be called very stupid men. However, I think we shall have all the success that we expect, at any rate in these points. And I think myself that the next four months will tell us a very forcible tale. We shall in due time get down with the shaft. We shall in due time reach that Pink lode at a deeper level in such a manner as Captain Thomas may think fit after consultation with his colleagues. I have no doubt we shall open up in Polberro as rich a mine as ever Mr. Hancock believes we shall open up, and, gentlemen, I am sanguine enough to hope that all the success will be achieved by the shareholders who have so resolutely stood by the concern in the darkest hours. I have the greatest pleasure in meeting you here to-day. I believe in meetings being held in Cornwall. (Applause.) I tell you, gentlemen, it is no secret that when we hold meetings in London we get a very few to attend. They seem to think they know nothing about the district and had better leave it entirely in the hands of the executive. I think they are wrong. I think a man who is a shareholder in a company ought to have sufficient interest in that company to attend the meetings of the company. I happen to be interested in various banks, railways, and other things, and I always make it a point of going to the shareholders' meetings, and expressing any opinion I may have to express on the business before the meeting. You would be astonished with what courtesy observations from any quarter are received, and how glad the directors are to see outsiders come and take an interest in the proceedings. (Hear, hear.) Our average attendance at mine meetings is small, but that average compares most favourably with the attendance at railway, bank and other meetings. The rule is that shareholders generally elect to stay away from the meetings, and to leave their business to be transacted by the officials they have placed in charge. It shows that the confidence of the shareholders generally is reposed in the directors, and in those officers who have the management of their affairs. This is a pleasing feature, but then, gentlemen, we must not forget that recently shareholders have had reason to regret not having become more acquainted with the business they have in hand. I think on the whole, however, that our commercial business generally is transacted in a highly satisfactory and honourable manner, and I do not think it is fair to point out to the failure of such affairs as the Liberator and other companies which have collapsed—I do not think it is fair to point to them as the reason why shareholders as a rule should not have confidence in those who have the guidance of their business. (Applause.) I believe the business of the country is on a sure and safe foundation. Of course we have fluctuations, we have the cloud and the sunshine, and it must be so, but notwithstanding all this you will find we are on the eve of a bright and glorious future as far as business is concerned. You may depend upon it, it is going to take a turn, a great turn for the better, and that those who stand to their guns now are the men who will benefit by the revival which will come to us in the near future. (Applause.) I therefore have every confidence in suggesting that we drink "success to Polberro" and that we associate with that toast the name of our excellent manager, Captain Charles Thomas, who is so much beloved and worthily beloved by all who come into contact with him. (Applause.) We wish him long life and happiness and it will be a great satisfaction to me to know that Polberro has turned out to be a very rich affair if only for the sake of our dear friend Captain Thomas, who takes such a deep interest in it. Of course, in this connection we must mention Captain Harper. I must also mention Mr. Hancock. (Applause.) I think it would be ungrateful on my part if I did not say that I never had so much courtesy and attention from any gentlemen as I have had from Captain Thomas, Captain Harper, and Mr. Hancock. I have the most perfect assurance that whatever can be done to bring us safely out into the sunshine and prosperity will be done, and that cheerfully, and without the slightest misgiving. (Applause.)

The toast having been drunk

Captain CHARLES THOMAS: You spoke of the district of St. Agnes, and having inspected West Kitty during the last month; I should like to make a remark or two concerning that mine. (Hear, hear.) There was some difficulty and people did not believe for sometime that the lode was to be found to the south of the slide. However, after driving some 30 fathoms they have cut the lode to the south of the slide. They opened up something like 11 or 12 fathoms at the 60 fathom level, and I believe I am right in saying all the stuff coming from that 11 or 12 fathoms did above 2 quarters of tin to the ton of stuff. That is important, for nothing has been done above or below that level. I must be cautious with regard to Polberro. I want to live on intimate terms with my excellent friend Mr Hancock. After the meeting he spoke to me sharply, and said at the next meeting we will divide the mining district and you shall speak of one district and I will speak of another. (Laughter.) There is one point I will speak upon, leaving the rest to him, and that is the crosscut. I will speak a little stronger after dinner than I did at the meeting—(laughter)—and I will allow you to judge for yourselves. We have driven from the Pink lode 27 fathoms towards the South House lode. We have had stones of tin, copper, and mundic from that end, and I think we may fairly calculate when we cut the lode we shall have a lode of some value. The junction of the Pink and South House lodes will be an important point, and when we can form an opinion on that we shall be able to advise a certain course of action in order to further develop the mine. In going west we shall take in virgin ground to the extent of some 250 fathoms, no level above or below the Pink lode having been seen anywhere in that district. I think our prospects are looking very favourable indeed. It is not a matter of hope, but one of expectation. We may expect in the next 16 weeks something very good indeed. As to the price of tin we cannot help, but seeing that times are improving, and that possibly the price of tin will improve, I think we may look for something very good in the district of St. Agnes. (Applause.)

Mr. G. C. HANCOCK, C.C.: I am much obliged for the kind way in which you have received my name. It is quite true, as Captain Thomas has just stated, that I remarked to him after the meeting that he had monopolised the whole description of the mine, leaving nothing for me to say; but now that he has dealt with one point only I can no longer get out of making a speech on the prospects of the mine, I will deal with a part of the mine which I have for many years considered very important—and that is the eastern part. During the former working immense quantities of tin were raised and sold from that part of the sett, and it is a well known fact here amongst St. Agnes people that only a short distance east of where the present end is at the 26 east immense quantities of tin were raised, and we shall be very unfortunate indeed if we do not during the next few months meet with important discoveries in that direction. (Applause.) As regards the cross cut north I think with Captain Thomas that during the ensuing quarter the future of the mine will, to a certain extent, be laid open to us, but whether we cut the South House lode rich or poor, I shall hold the opinion that at the junction of the Pink and South House lodes below that point at the cross cut north there is every chance of meeting with immense quantities of tin. (Applause.) So that whether rich or poor, as I said before, I should be disposed as a shareholder to go down to where the junction is if we cut into the South House lode at the 26 as poor as beggary. (Laughter and applause.)

Captain HARPER: I think the western ground is a very important point seeing we have got 250 fathoms to the boundary. I think if we continue operations we shall have something very good there, and I agree with Mr. Hancock that the junction of the two lodes mentioned is an important point. I have always had great confidence in Polberro property, and am certain that if vigorously developed it will be one of the best mining properties in the county. (Applause.) The cross cut north is a very important point; there has a great change come over it in the last 2 or 3 fathoms driving. We have had branches of tin occasionally ever since leaving the Pink lode, but the stones of tin have improved in quality during the last fathom or two. (Applause.) I think in the next 5 or 6 fathoms we shall be likely to meet with the lode. (Applause.)

Mr. HANCOCK: If you look at the branches in the last 5 fathoms west you will find our lode is producing as much tin per fathom as almost any lode in this parish, including West Kitty. (Applause). At the present moment we are not stoping, but merely driving. If that continues only a short distance further it will open up a section of ground, and we shall be enabled to take away that ground at a profit. (Applause.) That is one most important feature.

Captain HARPER: In connection with these branches in the western end we have got the same kind of branches as in the cross cut. These branches are yielding a lot of tin, and you would not know one from another, so similar is the stuff coming from the cross cut to that coming from the western end.

The CHAIRMAN: I will now ask you to drink "Success to West Kitty." The West Kitty agents are worthy of all praise, and I will ask them to reply.

Captain HOOPER: I am very pleased to hear what Captain Thomas stated with regard to our persevering with our crosscut. As I remarked to our friends in London some three or four weeks ago, we had all kinds of things said about us, but we took no notice, but continued our work and have now found the lode. (Applause.) If we had cut the lode at first and found no tin in it, I should not in the least have been discouraged. In West Kitty sometimes on the north part of the slide we have had very poor pieces of ground. I remember driving through several fathoms at the 70, when the lode was not worth saving, and we had to put it on the burrow. Directly afterwards we cut into this rich course of tin, which we have been working on now for 12 years and more. If we had cut into our lode at the 60 and found it poor I should not have been discouraged. After driving some 8 or 9 fathoms east we came across a gossan, and that disordered the lode a little. When we cleared that some few feet we found another, and we are now just getting clear of that. But we have got in the account house to-day some very good stones of tin that have come south of the second crossing or gossan. (Applause.) In driving west our lode has been from 2 to 3 feet wide. Yesterday Captain Williams and I were underground, and we found the lode is now from 3 to 4 feet wide; it is going larger, and we have valued it as worth £14 per fathom. (Applause.) We have a splendid prospect before us. I should like to say a word with regard to Thomas's part of the mine. When we cut into this lode at first we had a quantity of water. That water has been coming very freely ever since. Our pitmen and others went down yesterday at Thomas's shaft and found we have drained Thomas's part of the mine to the 40 fathom level. You will see we are draining a large piece of ground, how large we cannot tell, or how far east or west, but it will probably play an important part in the future development of West Kitty. (Applause.)

Captain WILLIAMS: As far as the south part of West Kitty is concerned I believe the idea that there is no lode there has exploded. (Laughter.) It has been freely said that there was no lode to the south of the slide, but we have opened up several fathoms of ground there which have been fairly productive. This result is important for mining in St. Agnes district, and there are very valuable properties round here which may be brought to the front when we get a better price for tin. (Applause.) There is a grand lode to the south of our sett, then there is West Kitty lode going west. There is another very good property to the west known as Polbreen or New Kitty. What has been said of West Kitty applies equally to Wheal Kitty. I consider Wheal Kitty mine to the south of the slide is a very valuable property, if properly developed and opened up. (Applause.) The lode in West Kitty is becoming more settled now, and soon we shall have precisely the same kind of lode as we had when we cut the lode first. We have driven through about 15 fathoms of ground, and the average value has been from £10 and £12 to £25 per fathom. If we get a better price for tin I think the St. Agnes district will compare favourably with any other in the Mining Division. (Applause).

The CHAIRMAN: I now give the toast of "The Bankers," coupled with the name of Mr. Bawden. A great deal has been said and truly said about the financial management of these mines, and I am afraid that all the credit is given to me. If that is so, it is a mistake, as all the credit is not due to me. There is no doubt I was the first one to mention it, but the system has been carried out by everybody, and every official connected with the company. Unless that had been so I could not have succeeded in carrying out my plans. Everything is done direct through our bankers, and that is a very great safeguard for the shareholders. I am afraid the cost and trouble to the bank is somewhat considerable.

Mr. BAWDEN, in reply, said if all mining was conducted on such principles it would be a great sense of security to outside shareholders, and would be very much to the benefit of Cornish mines as a whole. (Applause.) It was a great satisfaction to be connected with a company whose business was conducted on sound financial principles. That was undoubtedly the case in connection with Polberro, and if they could not command success, all he could say was that they deserved it. He believed they had got to the bottom of the depression in trade, and that henceforth times would be better. What he considered an important factor was that the production of

gold was increasing, and slowly but surely that was sure to have a marked effect on the trade of the world.

The CHAIRMAN next gave "Success to Cornish Mining," coupled with the names of Messrs. Michell, Clinton, and Bullen.

Mr. MICHELL was pleased to hear from Captain Thomas that between him and the other officials of the mine there was a full and thorough interchange of opinions with respect to the working of the mine. He had known very splendid courses of tin which turned out some thousands of pounds, cut in consequence of a conversation at a mine dinner. (Laughter.) Touching upon the price of tin Mr. Michell said Straits tin to-day was quoted at about 70. He remembered Straits tin being quoted at 58. If they could survive such a quotation as that, they could survive anything. Supposing the present depression was to continue for another 6 or 12 months, the St. Agnes mines were bound to exist after that. (Hear, hear.) St. Agnes mines were comparatively shallow compared with other mines in the county, and consequently they were much cheaper to work. He had no fear about Cornish mining; he knew copper and lead mining was done, but he saw no signs of tin mining being played out in the county. (Applause.)

Mr. CLINTON thought Mr. Reynolds was as much the right man to preside over the dinner as he was to conduct the business affairs of the company. In spite of discoveries of tin abroad, Cornish mining still existed, and he believed there was a bright future before it. (Applause.) There was no reason for despondency, the visible stocks of tin had decreased more than 2000 tons, and a remarkable feature as to consumption was that the deliveries in the past 12 months exceeded those of the previous year by 10,000 tons.

Mr. BULLEN said although tin was down now, it was sure to rise again, and the present shareholders who held on now would then receive their reward. (Applause.)

The CHAIRMAN then submitted the toast of "The outside shareholders," coupled with the names of Mr. Challis, Mr. Payne, and Mr. Repper. He said that Mr. Strauss promised to be present if possible, as he took a very great interest in the progress of their business. He had not had the opportunity of speaking lately with Mr. Strauss on the tin market, and for that reason he regretted that gentleman was not present with them.

Mr. CHALLIS, in response, said he had hoped to have met with that wonderful tin merchant, Mr. Strauss. He had not forgotten what Mr. Strauss said a short time ago. Some one had said that they had not much to fear from the Straits, but if he remembered Mr. Strauss's words they had a good deal to fear from the Straits; still Mr. Strauss has no fear for Cornish mining, and believes it will hold its own. There was no doubt outside shareholders much preferred things being stated in a moderate way than in the thing being overdone and overstated. (Hear, hear.)

Mr. PAYNE felt that by their next meeting things would be altered and he eulogised the services of Mr. Harvey, secretary of the company.

Mr. REPPER also responded and said Polberro sett was one of the best properties he, as a miner, knew of in the county.

The toast of "The Press" concluded the proceedings.

THE ARIZONA COPPER COMPANY, LIMITED.

Increasing the capital of the company.

An extraordinary general meeting of the above named company was held in Edinburgh on Tuesday, under the presidency of Mr. GEORGE AULDJO JAMIESON, for the purpose of considering resolutions for the increase of the capital of the company to £755,000, by the creation of 160,000 new shares of 5s. each.

The CHAIRMAN, in moving the adoption of the resolution, said there was no necessity for him to dwell upon the motives or the reasons which had induced the directors and the company to adopt the proceeding, of which this was only the formal portion. The substance and the principles of the course which had been taken had been already fully debated, and it would be gratifying to them, as it was to the directors, to find that the committees appointed by the debenture and shareholders had unanimously and cordially approved of the precise form of giving effect to these resolutions. The directors had been very much distressed to find that the cost of these re-arrangements was extremely heavy, the minimum sum stated being £5000, and from some experience of similar proceedings he had not been disposed to regard it as unnecessary to provide a considerable margin to that sum. It was not necessary for him to dwell upon the importance which attached to uncalled liability in shares. He thought recent circumstances had brought into very strong relief the fact that the person who undertook liability of that kind undertook a very heavy and somewhat dangerous burden, and he did not think the full weight and importance of that burden had been either appreciated or recognised in the arrangements made in many companies. When the directors asked the shareholders of the company to undertake a liability of 5s., after having paid already so much, they felt it should be made quite clear that some recompense was to be afforded, and they had, therefore, considered it right and proper, instead of dissolving that company and re-arranging another at large expense, to propose that they should add nominally to the capital £40,000, and to that £40,000, which they proposed primarily to regard solely as liability, they should attach a preferential dividend of 10 per cent, if the money was paid up, and a preferential dividend of 5 per cent, on so much as might not have been called or paid up, so that persons who undertook the liability would be compensated by a relatively considerable amount—£2000 a year for the £40,000. The directors and trustees of the Trust and Mortgage Company were satisfied that this scheme solved the difficulty and presented a favourable alternative to those whom the directors called upon to undertake unwelcome liability.

Mr. JOHN WILSON seconded the motion.

In reply to questions the CHAIRMAN said he had been authorised to anticipate by a few days the substance of the report which would be put into the hands of the shareholders in a few days. The result of the year which closed on September 30th last would be materially more favourable than that of the previous year, which latter showed an almost nominal profit. The year which would now be reported on would show a result which, as contrasted with that of the previous year, would certainly be regarded by the shareholders as very favourable, and such as justified him in thinking a brighter future was in front of that company.

The resolutions were then put to the meeting and unanimously adopted.

THE ALUMINIUM COMPANY (LIMITED).—An extraordinary general meeting of the Aluminium Company (Limited) was held on Wednesday at the Cannon-street Hotel, Sir Andrew Clarke presiding, for the purpose of revising the articles of association to meet the reduction recently made in the capital of the company. The proposed revision was embodied in the following resolution:—"That Article of Association 92 be altered by inserting after the words "at least" in the third line the words "500 shares of £1 each or £500 of stock," in substitution for the words "200 shares of £5 each or £1000 of stock."—The Chairman, in moving the resolution, said it was necessary the alteration in the Articles of Association should be made at once in order that the position of the directors should be brought into conformity with law.—Mr. J. S. Parkin seconded the resolution, which was carried without dissent.

MATABELELAND COMPANY.—An extraordinary general meeting of the Matabeleland Company was held on Wednesday at Winchester House, Mr. F. Gillham presiding, for the purpose of considering a resolution—"That the capital of the company be reduced from £75,000, divided into 120,000 shares of 12s. 6d. each, to £60,000, divided into 120,000 shares of 10s. each, and that such reduction be effected by returning as capital in excess of the wants of the company the sum of 2s. 6d. per share upon all the 79,889 issued shares of the company, whether fully paid up or called up to the extent of 12s. 6d. per share, and by reducing the nominal amount of all the shares, whether issued or unissued, from 12s. 6d. to 10s.; the return of 2s. 6d. per share, aforesaid, to be made as and when the directors may think fit."—The Chairman moved the resolution in one sentence. Mr. Bergtheil seconded it, and it was unanimously carried.—The meeting then terminated.

KANGARILLA PROPRIETARY SILVER MINES (S.A.) (LIMITED).—An extraordinary general meeting of the shareholders in the Kangarilla Proprietary Silver Mines, which has now been reconstructed, was held on Wednesday at the offices of the company, to receive the report of the liquidator as to the process of winding up. Mr. J. Robertson, the liquidator, presided, and stated that the meeting had no connection whatever with the new company, but was simply a formal meeting of the shareholders in the old company, which was put into liquidation 18 months ago, for the purpose of receiving the accounts of the liquidator. As a matter of fact these had already been sent to all the shareholders. He might state that the property of the old company had been transferred to the new one, and the whole of the debts and liabilities cleared off. Mr. Robertson concluded by moving a resolution ordering the books of the company to be kept for one month, and then destroyed.—Several shareholders expressed dissent to the proposed destruction of the books, and eventually an amendment, proposed by Mr. Lasker, to the effect that the books should be kept, was carried.—The proceedings then terminated.

BRITISH BROKEN HILL PROPRIETARY COMPANY (LIMITED).—An extraordinary general meeting of the shareholders of the British Broken Hill Proprietary Company (Limited), was held on Monday, at Winchester House, under the Chairmanship of Mr. Russell Roberts, for the purpose of confirming resolutions passed at a previous meeting, altering the Articles of Association in certain matters of detail connected with the arrangements for the holding of meetings in the Colony, and for the appointment of additional directors. In each case the resolutions were submitted from the chair, seconded by Mr. Brand, and carried without discussion. The Chairman, at the conclusion of the meeting, said it might be of interest to the shareholders to know that Mr. Woodhead arrived at Adelaide within a day or two after the last annual general meeting, and at once proceeded to Melbourne, whence he had sent one or two cables to the directors. Up to the present time nothing of importance had been done, but Mr. Woodhead was assiduously engaged in the business of the company, and one or two important points had been discussed with him by cable. Probably in a short time they would hear from him by letter—perhaps within ten days or a fortnight—and by that time the directors would be in a position to afford the shareholders some more information as to the position of affairs.—A shareholder expressed some fear that the management at the company's property would find some difficulty in treating the sulphides.—The secretary, Mr. D. Petrie, said that no decision had yet been arrived at as to the best method of treating the sulphides. Some two years ago the Proprietary Company had an expert on the property for some months, and he had reported that it would not pay to treat sulphides of less than 18 ounces. The Block 14 Company, the company whose property adjoined their own, were still carrying out a series of experiments in the same direction.—The Chairman, said the question was a very difficult one and already the present directors had received several suggestions for its solution. As far as their own company was concerned, however, he did not suppose that the question had yet become a very pressing one; for they had not yet gone deep enough.—The proceedings then terminated.

OUR BOOK CASE.

THE LAW OF SUPPORT.

"*A Treatise on the Law of Support.*" By George Banks, M.A., of the Inner Temple, Barrister-at-Law. (London: Sweet and Maxwell, Limited, 3, Chancery Lane.)

No one who has for any length of time retained an interest in mines, or who has been concerned in their management, will have remained long in ignorance of the important bearing of the Law of Support upon the industry, or of the extreme intricacy of its provisions. To such of these as will not be content with the distant and nebulous view which most laymen take of the law, Mr. Banks will have rendered a useful service by the publication of a clear and easily comprehensible narrative of the legal provisions in this bearing. There is something akin to humour in that part of the introductory chapter where the author pictures the owner of a field or a building discovering a gradual subsidence—or flux, he calls it—occurring on his property, and propounding to himself the question: "Can't I make someone pay for this; and, if so, whom?" The answer to this question, unelucidated, is rather an involved one, and, at first sight, would seem a difficult thing to convey clearly. Mr. George Banks, however, has managed to do this. He has done more. The principles of the Law of Support are conveyed with clearness and force, which argues not only a deep knowledge of the law, but an extraordinary ability in putting it into clear phraseology. The mining man may take up the book with confidence.

WESTERN AUSTRALIA AS A MINERAL PRODUCING COUNTRY.

"*The Mineral Resources of Western Australia.*" By Albert F. Calvert, M.E., F.R.G.S. (London: George Philip and Son, 32, Fleet Street.)

Mr. Calvert's interesting little work has made its appearance opportunely. Australia now fills a larger space in the eyes of the mining world than ever before. Upon every hand—in the Press and on the platform—signs of a gathering interest in the gold resources of the south-eastern continent are to be noted. Australia has come into a wide and deserving popularity and no part of it more so than the vast tracts of country lying to the west of the 129th meridian. Mr. Calvert's choice of a subject has precluded him from elaborating round points of detail. The book is not a whit the less useful upon that account. The graphic way in which the main outline of the narrative has been sketched in, and the bold relief with which the more solid parts stand out are no inconsiderable reward for the persistency with which the author has curbed his pen from any approach to prolixity. Something may be said of the "Mineral Resources of Western Australia" which does not apply to one in five of the books in the library of a mining engineer. Thanks to the broad and liberal way in which Mr. Calvert has treated his subject the work appeals to a much wider section of the community than the School of Mines or the Institute of Mining and Metallurgy. The general reader will take it up with pleasure and put it down reluctantly. There would not, however, in this case be any justification for a parallel of the accusation which Sir Robert Ball has incurred by the most recent of his fascinating books. Mr. Calvert has not allowed the fear of narrowness to hurry him into the opposite fault, nor his desire to address a large public body to furnish an excuse for an unscientific or an inaccurate language.

RYLAND'S DIRECTORY.

The fifth edition of Ryland's Iron, Steel, Tin Plate, Coal, Engineering and Allied Trades' Directory is as comprehensive as its title indicates, and is so well compiled that the reputation established by the publication in past years is fully maintained. The trades included are of sufficient magnitude to occupy over 800 pages in their enumeration. "Ryland's" has long been admitted to a place among the more important and authoritative directories of the country. At the commencement of the volume is a large sized map of the iron works, iron ore mines, and coal districts, which will doubtless be found very useful by the wide class of commercial men to whom the directory appeals. There are also upon a larger scale several maps of the busier manufacturing districts in the north, and realistic cuts representing factories in full blast.

CORNISH MINING: CAN IT BE REVIVED?

An Australian Remedy: The No-Liability System as Applicable to Cornwall.

BY AN ANGLO-AUSTRALIAN.

V.

INFERENTIALLY the reference to "Deep Sinking" in Victoria may, from the foregoing, be taken to represent a condition of Mining in Cornwall at present not very dissimilar to that which existed at the critical period referred to in that colony. False prophets were on every hand decrying against further attempts, and they exist to-day, as then, everywhere, ever ready to throw cold water upon true enterprise in any shape, mining not excepted, Cornish mining coming in for its share, as a matter of course.

Let me quote an instance or two to show the value of opinions of men of that stamp—the genus croaker, one might call them—in reference to some mining districts (now well known), when the work was mainly prospective. Certain experts (laboratory not practical mining experts) from two colonies were deputed to visit and report on the Broken Hill district on behalf of a firm of good standing, with a view to investment. The place was faintly praised, as "probably containing some patches of rich ore, but nothing to justify their advising friends to purchase shares, which were then £9 per share but would be more likely 9s. in a year's time." As a matter of fact, these shares went up to £250 and more, within the time, and it may be inferred that the opinions and prophecies of such experts are discounted largely by the disappointed speculators. The same may be said of the great Tasmanian fields, for great indeed they are and will be in spite of wrong impressions conveyed through the check which that industry received from the financial crisis. On every hand one could hear of "pinching out," patchy ground and other phrases, but the contradictions come day after day telling of rich yields and well-defined lodes, to the gratification of those who stuck to their opinions through evil and good report as to the importance of the Zeehan fields for legitimate mining and enterprise. As I have said before let Cornish mining but have fair play in the race and it also will win. The conditions of mining, it is hardly necessary to say, are altered, difficulties have to be encountered in the way of competition which bear heavily upon metalliferous (British) mines generally, and these must be faced boldly, and overcome, if Cornish mining is to be revived. Mr. Penhale, writing from far off Megantic County, Canada, thinks the tribute system would do much towards helping Cornish mines. No doubt it would, if more generally and systematically followed, and to a degree not attainable by the ordinary hum-drum time system, with no incentive attached in the way of bonus or allowance to supplement the daily rate. There is not that longing for "knocking-off time" with tributers, for the reason that on their hands time does not hang heavily. Tributing has helped to bring some mines to the front in Australia, but the system is not without its drawbacks; there is a good deal of the lottery element about it, the game of chance, and the temptation to go in debt on speculation, to subsist on hopes which may not be realised, and there is also the possibility of good men getting the worst places—harder work and poorer return. A better system would be that of giving a minimum reasonable wage, and a rate per ton or a bonus to supplement the daily (certain) rate—a system which the writer has seen tried with better results than either contract or time work gave. The tribute system is a good training school for one thing, because of the scope it offers for skill and latent talent, and it has done much for true mining.

But Cornish mining wants something more than men and money to put the industry into a healthy vigorous state once more, and maintain it thus. As has been mentioned, the conditions are altered now from those of former days, the system of royalties, dues, and restrictions have not altered, but continue, as of old, to be levied on the gross yield with unvarying regularity and strictness, with scarcely any exceptions. The cost of winning the ore increases, competition decreases its value, yet rents and royalties go on for ever. Let us look at the facts squarely. What do we find? That dues levied on the gross yield will average at least at the rate of 30 per cent. on the divisable profits, and this is manifestly so unfair in principle and effect that one wonders why a question of such vital importance is not vigorously taken up and pursued until public attention is properly drawn to it. The taking over of the mines by the State with reasonable compensation, as previously stated, would unquestionably work a great change in this respect, and remedy the evil. The introduction of the colonial systems, as explained, aiding in the good cause of Cornish mining.

Deep sinking naturally implies increased plant, greater skill, more anxiety and attention on behalf of managers, and, above all, economy in every detail, in order to make profit and keep a mine going on a sound basis. That such can be accomplished we have evidence from Victoria in a marked degree, up to date, in the yields for 1893, and the dividend returns also—the best since 1885, I am informed. Nor is Cornwall behind hand with regard to the value of deep workings, although under a very different system to the former as regards encouragement. Let the latter get anything like the same chance, and there need be no doubt of the result when that happy time comes.

Although deep sinking involves many changes there is the fact before us that with the engineering skill of our day, and the great strides in all matters pertaining to mining we can overcome almost any obstacle, and it is quite within the bounds of possibility that mines will be worked in the future at 5000 feet in depth with as little difficulty as they were in the past at 500 feet. The days of low pressure steam are past, because of the recognised economical value of high pressure with compound engines and condensors on the most approved lines. There is a pumping plant in the Tasmanian Gold Mining Company's mine sent out from Messrs. Harvey and Co.'s, works at Hayle, which is giving satisfaction, and is worthy of mention as showing what can be done in this respect. Compound engine direct action, 10 feet stroke and two 24-inch pumps, 9 feet stroke 4 lifts of 200 feet each, if I recollect aright, are the main features, quite equal to say, 165,000 gallons per hour at easy speed. The old winding speed for hauling will also be forgotten, and an average rate of 2000 feet a minute will be looked for. Co-operation in regard to winding and pumping will be more general between mines not too far apart, on the score of mutual interests, and, what is of primary importance, ventilation also.

Mining as a legitimate industry:—When mining is more fully recognised as such, then, and not till then, will we see that revival which is so much needed, and those life-giving laws that will set going the many deserted mines which in turn will add wealth to the nation, and improve the status of the people and districts in every way. Thinking minds recognise the fact that the material wealth of a nation consists in its own resources, and in the development of these, in preference to any other form, must the prosperity of a country be built up. This axiom can hardly be controverted, because it means for a nation the employment of its own people whose work enriches the State, whilst the wages paid to the workers in one industry help in turn others. Thus the miner by bringing to the surface the earth's hidden wealth, benefits the State as a producer and consumer in a marked degree.

It is to be feared that the nation will some day have cause to regret the loss of its skilled workers if mining and mining laws do not receive that attention which they assuredly deserve in the United Kingdom as in the colonies (there are many good mines in Ireland and Scotland suffering through desuetude which also can be revived to advantage), and this fact comes home to one who has seen the immense advantages which mining has brought to Victoria and other colonies at a critical period. There are 23,000 miners in Victoria, out of a total population in that colony of about 1 1-7th million, so that, taking the working male population at one third of the whole would show 5 per cent. of the latter as being employed in mining. It was well for Victoria when banks failed and financial institutions tumbled that her mining industry held on its course. Without doubt, it was a principal factor in saving the colony. Long may its mining flourish, and continue to increase the wealth of the country!

As the eight hours question is one of some importance to miners, it may not be out of place to remind those who are agitating in connection with the subject that eight hours is the law and custom in Victoria and Australia generally, and that it works well. Three shifts in 24 hours when mines are in full work is the rule, and the writer is able to say that employers and employed are gainers by the system. Its not having been referred to in connection with our colonies would lead one to suppose that those who have the subject in hand are not aware that it exists there in full force.

In concluding the important subject of Cornish mining and its revival, and in bringing to the notice of readers of *The Mining Journal* some of the principal features of Australian mining and mining laws, there is the feeling in the writer's mind that the field is a wide one for others to travel in, and the hope that the subject may continue to be kept alive in the breasts of everyone who has the interests of mining as an industry at heart. Much can be done by the young men of the present day towards bringing about the desired reforms by steadily pursuing the subject, and keeping in touch with what is passing around them in other lands in regard to matters appertaining to mining. By reasonable agitation and persistency, aided by representatives who are thoroughly in touch with the subject (and none others should be sent or allowed to move in the matter), much may be done—by supineness nothing. The wheels of progress move rapidly now. Our colonies have given us some lessons which the mother country might copy without loss of dignity, and with much advantage in regard to mining and especially "Cornish mining."

PHOTOGRAPHY IN MINES.

PAPER BY MR. W. HUGHES.

In a paper recently submitted to a meeting of the Federated Institution of Mining Engineers, Mr. H. W. Hughes deals in a manner at once graphic and interesting with "Photography in Mines." As he remarks at the outset, a peculiar interest attaches to the photographs of places which are generally inaccessible to the majority of people. Speaking of the progress of the art in this application, the writer says that with the exception of several isolated attempts, nothing seems to have been done in this country, since Mr. Sopwith's experiments, until about 18 months ago, when Mr. Burrow and the writer took up the subject, and endeavoured to obtain a complete series of views showing the methods of mining where the excavations are larger than is usual. A selection of the former's results have just been published in book form, and some of them will be exhibited by the writer. For mining work it is necessary that the operator should either be an engineer or have an engineer associated with him, and in this respect Mr. Burrow was happily situated, as he was assisted by Mr. William Thomas.

The Camera.

For many obvious reasons it is necessary that a camera should be of the lightest and most compact form for underground work, as it often has to be erected in awkward and confined situations. Several designs were inspected, and for many reasons the whole plate "Acme," of Watson and Sons, giving a view 8½ inches by 6½ inches, was preferred. Like many cameras the Acme, when closed, has a thickness regulated by the combined substance of base board, bellows front, and focus glass, for the front folds into the base, and the bellows occupies the space between it and the focussing screen, but, unlike the majority, all the operations of erecting are released and locked by spring catches. When setting up, the spring on the top of the body is first moved aside and the body revolved on its hinges, when the struts run down in the grooves in the side until they fall into a niche near the bottom; at this point the clamping nuts are tightened, and the body is held at right angles to the base. The front is then lifted up, and two projecting pins at the foot are slipped into grooves in the front of the base, and are held there by spring latches which rise automatically and secure them. The locking of the front is an exceedingly ingenious and convenient arrangement, for while it firmly holds the bottom portion and allows the front to swing in a vertical plane to any practical amount, yet, by inclining the front backward to an angle of 45 degs., it draws loosely from its fittings and is ready for closing.

The Lens.

Practically speaking, it may be said that the rapidity of a lens depends on its aperture and focal length, and as in underground work speed is of the greatest importance, a lens possessing such advantages should be secured. The portrait lens is of the greatest intensity possible, and was used by Mr. Sopwith in his experiments, but it has not the power when working at full aperture either to focus the image sharply at the edges of the plate, or to represent objects in the background with the same sharpness as those in the principal plane on which the focus has been made. In many cases this is an advantage from an artistic point of view, as most people prefer to see the background subordinated to the principal object forming the picture, but in many mining operations objects of importance are situated in several different planes, and if the photograph is to be of value for scientific purposes, such objects must all be in focus at the same time. In order to obtain this advantage the aperture of the lens has to be reduced by the insertion of what are known as stops into the brass mount carrying the several elements of which most lenses are constructed. These stops are now generally expressed, not in actual measurement, but as a fractional part of the focal length, thus *f.* 8 is an aperture having a diameter equal to one-eighth of the focal length of the lens it is associated with. Most English lenses are now marked with the diaphragm apertures recommended by the Photographic Society of Great Britain, each of which is half the area of the preceding one. Provided the time for correct exposure is known with any stop, the amount necessary with the others is easily calculated, as when using the next smallest stop double the time must be given. The diaphragms are marked thus:—*f.* 4, *f.* 5·6, *f.* 8, *f.* 11·3, *f.* 16, *f.* 22·6, *f.* 32, *f.* 45·2, *f.* 64. The unit aperture is *f.* 4, and if an object required one second exposure with such stop, it would require two seconds with *f.* 5, four seconds with *f.* 8, eight seconds with *f.* 11, and 256 seconds with *f.* 64. This at once shows the necessity of using the largest possible aperture where either the light is poor or the subject likely to move. Every lens for underground work should have an iris diaphragm, as the number of things to be carried about is thereby reduced, and the operation of altering the stop is made easy and comfortable; the risk of fogging the plate is also done away with. When the lens mount has a slot in it, and plates of extreme sensitiveness are used, sufficient light may pass in through the slot to spoil the plate. It may be thought that what are known as wide angle lenses, which are of short focal length, and include a large angle of view on the plates they are made to cover, would be best for work in mines, but although they sometimes have to be employed, yet they do not give satisfactory results. They often exaggerate the perspective to such an extent as to make the resulting negative look very unlike the original, and owing to the principles on which they are constructed, have to be used with a comparatively small aperture; as a rule, the largest stop they are supplied with is *f.* 16, but the majority do not work satisfactorily above *f.* 22.

Plates.

The preparation of the exceedingly sensitive plates which have been placed on the market within the past 18 months is a trade secret, and a valuable one. The method of obtaining this extra sensitiveness cannot, therefore, be given. It is, however, known that in order to obtain the maximum amount of photo-chemical decomposition from the minimum exposure, the film must contain some halogen absorbent. Since the writer commenced underground photography the sensitiveness of plates has been enormously increased; indeed, the most rapid now on the market are nearly three times as quick as those obtainable two years ago. Mere speed is, however, not the only point to which attention has to be paid, as the quality of the film is of equal importance. Good rapid plates are an essential where artificial illumination has to be employed, more especially in mining, where any figures in the view necessarily occupy somewhat strained positions. The writer's first satisfactory results were obtained on the Mawson plate, which then had a speed of about 80 on Watkins' scale, but the introduction of the Cadett lightning plate proved a perfect boon, as it allowed the exposure to be reduced one-half. Most manufacturers have speeded up their plates during the past year, but from the last table published by Mr. Alfred Watkins of the trials he has made, it appears that the Cadett plate still holds its own as the fastest made. The average speed issued is from 160 to 180 on Watkins' scale, and the numbers, which are marked on each box, may run in rare cases to as high as 228. All the writer's latest results, and also those of Mr. Burrow, have been obtained on such plates, and both can bear witness not only to the great speed but to the good quality of the film.

Methods of Illumination.

Passing to the methods of illumination, the author dismisses the incandescent electric light as practically useless for this purpose, and the arc electric light as inconvenient, and proceeds that when artificial illumination is employed the light must not only have a high degree of intensity, but be rich in rays, which are chemically active, viz., green, blue, and violet. The metal magnesium, when burnt in air, gives a powerful light, rich in actinic rays, and quite early it was used for obtaining photographs by artificial light. Messrs. Debenham and Sopwith both employed it in the form of ribbon. The former cut a number of lengths of the ribbon, tied them together at one end, and thrust the other end into a lump of clay stuck against a sheet of tin, which was used as a reflector, and held in the hand. Mr. Sopwith's lighting arrangements consisted of a number of tin reflectors, usually from three to five, shaped to parabolic curves to concentrate the light, before each of which was burnt from 6 to 10 inches of magnesium ribbon. Having referred in some detail to the different methods of illumination, the author passed on to a consideration of the

Development

of the plates. The writer has obtained best results with pyrogallic acid and ammonia in 10 per cent. solutions as follows:—(1) Pyrogallic acid 1 ounce, sodium sulphate 3 ounces, citric acid ½ ounce, distilled water to 10 ounces. (2) Liquid ammonia ·880 1 ounce, water to 10 ounces. (3) Potassium bromide 1 ounce, water to 10 ounces. With a correct exposure 1 ounce of developer is best formed by taking 10 minims of each solution, Nos. 1, 2, and 3, and diluting to 1 ounce, but in order that development may be well under control it is better to commence with half the quantity of alkali. Indeed, as the great majority of the writer's plates have been considerably under-exposed, he usually takes 40 minims of No. 1, 40 minims of No. 2, and 20 minims of No. 3, and dilutes it with from 4 to 6 ounces of water (for the whole plate size). At intervals of about 10 to 15 minutes a further quantity of 10 minims of the ammonia solution is added. Development is slow, but usually all detail can be coaxed out, and sufficient density obtained. When development is complete, the plate is fixed by immersing it in a solution of sodium hyposulphite, which dissolves out the unacted upon silver bromide. Intensification of the image is, however, often necessary. This is generally done by first bleaching the negative with a solution of bichloride of mercury, and after washing for at least an hour in running water, treating it with a dilute solution of ammonia. If all the hyposulphite of soda has been eliminated from the negative by washing before placing the negative in the mercury solution, and the washing is complete after bleaching, the writer's experience is that the image is practically permanent.

General Remarks.

The difficulties to be overcome are not many, but are hard to surmount. In all classes of mines the smoke resulting from blasting, the moisture laden and misty atmosphere, and the dripping of water from the roof, are generally present, these being supplemented in coal mines by the presence of coal dust, which not only thickens the atmosphere, but deposits particles on the lens and plate. The condensation of water on the lens and plate is, perhaps, the most difficult matter to avoid. So far as the plate is concerned, one has to trust to luck; but with the lens the best preventative is to carry them in the trousers pocket, and so warm them up to the temperature of the body. Even with all precautions, and after an examination has been made to see if the lens is clear immediately before exposure, the opening of some door in one of the airways may momentarily divert the regular current and cause some cooler air to enter the place being photographed, with the result that the glass is chilled, and immediately the ordinary warm air again comes into contact with it the lens fogs and the plate is spoiled. The difficulties of focussing and composing the picture have already been alluded to. Often on development it is found that the figures are very badly situated, or that some desired point is not included, or even that an important part is out of focus, and consequently the plate is spoiled. None of these things should happen if it were possible to examine the view on the focussing screen. The smoke produced by burning magnesium is very dense, and if it gets in front of the lens will spoil the plate. For such reason it is best that the current of air should be from the object to the lens, or the clearness of the picture will be sadly interfered with, even if not completely spoilt. Mr. Burrow has found on several occasions where he could only get dull pictures looking, say, from east to west, he got clear ones of the same spot looking west to east, and this was not due apparently to a change in the direction of the air current. He cannot explain the matter, but mentions it as a curious and oft-repeated experience.

THE OIL SHALE INDUSTRY OF FRANCE.*

AN INTERESTING PAPER.

The distillation of oils from bituminous shales began in France as an industry shortly after the first researches on the subject had been completed by Mr. Laurent de Reichenbach in 1830. The practical application in France of shale oils to illuminating purposes dates from 1839, when Mr. Selligue, who had been making investigations on the distillation of the Autun shales, succeeded in refining the oils thus produced, and invented the processes whence have been derived (with some improvements) the systems now in use. The oil shale industry of France is older by a few years than that of Scotland. The principal bituminous shale deposits so far known in France are those of Autun and Boxières-les-Mines; the first named have been worked uninterruptedly since 1862, the last named since 1858. There are also similar workings in the departments of the Var, the Puy-de-Dôme, and the Basses-Alpes; but out of 210,000 tons of bituminous shales (9000 of which were boghead cannel) brought to bank in 1890, the Autun basin figures for 156,000 and the Boxières basin for 51,000 tons—thus accounting between them for very nearly the whole annual production. The present paper is, therefore, simply confined to the industry as developed in the shale fields of Boxières and Autun. The bituminous shales of these two districts belong geologically to the Permian system. In the districts of Boxières the formation consists essentially of sandstones and shales of a blackish colour analogous to those of the coal measures, and is characterised by three horizons which are (in ascending order):—(1) The coal; (2) the oil shale; (3) bed of chert, fœtid limestone, and thin bituminous shale intercalated in sandstones. The coal horizon only contains one workable seam; it is about 6·56 feet thick. The oil shale horizon includes two bands of shale, one only of which is workable in each mining royalty. The Autun coal basin comprises two series: (1) A lower series belonging to the coal measures and worked at Epinac, and (2) an upper series containing the bituminous shales, which appears to belong to the Permian system. The shale-field proper covers an area of 45,000 acres, and there are nine well recognised beds of shale, seven of which are workable. The workable or profitable thickness ranges generally from 6 to 8 feet, save in the case of the upper bed worked at Les Télots, where a thickness of only 3 feet is profitable; but that very bed includes a 10-inch seam of boghead, which enhances its value very considerably. In the Buxières basin, then, both coal and shale are worked, while in the Autun basin only shale and boghead are produced—all the coal in the last-named basin being confined to the Epinac royalty.

Distillation.

Passing on to describe the process of distillation, the author states that there is no difference between its application in one district and in another. The process may be subdivided according to its two essential operations:—(*a*) The distillation of the bituminous shales yielding the crude oil; and (*b*) the refining of the crude oil yielding the various commercial oils. The shales are distilled in vertical cast iron retorts of diverse cubical content (46 to 56 cubic feet) but of uniform type. These retorts are grouped in batteries of 12 to 24 in kilns built of masonry. The platforms on the top communicate with the floor of the crushing room where the shales brought from the mine are broken up into fragments of a suitable size. The retorts are in cast iron, 1 18 inch thick and slightly flattened. Their shape is that of a parallelopiped terminated at its lower end by a reversed pyramid. Each retort has three orifices, the uppermost (*a*) is used for charging, the second (*b*) is the outlet for the products of distillation, and the third (*c*) at the bottom is for emptying the retort of the residues. A separate fire and a separate chimney are allotted to every retort, as also a separate worm and receiving tank for the gases. The retorts are thus perfectly independent of each other and can be worked separately. They are placed above and in the axis of the furnace. The shale as it comes from the pit is tipped into the crushing-room, which is always situated close to the retort-bench, and here it is broken up either by hand or by machine into pieces of about 60 cubic inches. It was long held that, shale being a bad conductor of heat, the manufacturer's interest lay in breaking up the shale into small pieces, so as to facilitate distillation. But practical experience has proved that the shale distils just as well when broken fairly large as when it is crushed small, and moreover the small cannot be conveniently used as a fuel after distillation. The operations of charging and emptying the retorts then take place.

The chimney-dampers are opened, and the tip-waggon is brought into the proper position below the retort that is to be emptied. The sliding doors forming the floor of the hearth are drawn aside, and the mass of burnt waste tumbles from the hearth into the waggon. The latter is then run out to the tipping-heaps, while the sliding-door is re-closed. This done, the workman pulls aside the fireproof damper N, and thus opens the base of the retort. He is provided with a rake (bent at an angle), which he thrusts into the retort through the door M and the opening *c*, and he then removes the distilled shale from the retort, causing it to tumble down on to the hearth. When the workman considers that the retort is empty, he hails another workman who stands on the top of the kiln; and this man proceeds to open, orifice *a*, closed by a plug, and looking in, satisfies himself whether the retort is empty as stated. If this be so, the man who is down below closes the damper N, while the man on the top of the kiln pours into the retort about 6 cubic feet of coal ash or burnt small shale. This makes a compact bed at the base of the retort, and seals hermetically the discharge outlet, a desideratum which is not attained by the mere sliding to of the damper N. The shale is then brought (in wheel barrows, or, better still, in small waggons which run along a tramway on the top of the kilns), and is tipped into the retort. As this goes on, the shale is carefully raked into place so as to form a fairly compact mass with no vacant spaces. The retort is then closed by the cast iron plug and this is luted with a mixture of clay and sand so as to avoid cracking during the process of distillation. The kiln, generally, and the retort being at a high temperature at the time of charging, distillation begins at once. For the first three or four hours steam and ammoniacal vapours are given off. These condense in the worm place in the cooling cistern and are collected in the receiver E. After that the issuing stream becomes more and more charged with oil and at the expiration of 12 hours the return runs nothing but oil. This lasts from eight to ten hours, when (24 hours after the first charging of the retort) steam begins to come off again. The operation may then be considered as completed.

Refining of the Crude Oil.

The crude oil produced by the distillation of the shale, very dark in colour and of a very disagreeable odour, is sent to the refinery, where it is subjected to a series of distillations, and treated with sulphuric acid and with caustic soda, and is washed with water. The writer then proceeds to describe the different methods of refinery in vogue at the various French factories, and the different processes of treatment, after which he deals with the prime cost and economic results, saying that the prime cost of the crude oil varied from 3·86d. to 4·92d., and averaged 4·30d. a gallon, and the cost of distilling amounted to about 0·229d. per gallon. Admitting an average of 175 gallons distilled for every 100 gallons of crude oil, the cost of distillation for every gallon of crude oil treated will be 1·75 × 0·229d. = 0·401d.

The cost of treatment with chemicals and labour averages 0·747d. per gallon. Admitting that the treatment of 100 gallons of crude oil involves the scrubbing of 105 gallons, the cost of washing will be seen to amount to (1·05 × 0.747) = 0·784d. The cost of cartage, loading into barrels, &c., may be reckoned at the outside as 0·108d. per gallon. Whence is obtained the following summary of the cost of treatment (miscellaneous expenditure and redemption of capital included):—Distillation 0·401d., chemical treatment, &c., 0·784d., cartage, loading into barrels, &c., 0·108d.; total cost 1·293d. per gallon.

*Summary of a paper submitted by Mr. G. Chesneau to the Federated Institution of Mining Engineers.

THE EDITOR'S LETTER BOX.

**** We wish it to be understood that we do not hold ourselves responsible for, and do not necessarily endorse, the opinions of correspondents. All communications must be accompanied by the names and addresses of the senders, though these need not necessarily be published.*

GOLD EXTRACTION.

TO THE EDITOR OF "THE MINING JOURNAL,"

SIR,—There was addressed to me the other day, by whom I do not know, a copy of the *African Review*, dated February 3rd, in which there appeared an article under the title "Gold Extraction."

Having for many years been, to my sorrow I confess, associated with gold mining enterprise of one kind or another, I eagerly read the article in question, expecting to find therein the lamentations of some hapless individual, who, like myself, had suffered from the disagreeable operation of gold extraction from his pocket, or, mayhap, to learn from it some way by which the speculative errors of my confiding and trustful youth might yet be repaired. You may judge of my surprise, therefore, when I found the article to be but an ingeniously, I wish I could say ingenuously, veiled attempt to extol, to the prejudice of other methods, the process claimed to be the invention of Mr. J. B. Hannay, of white lead fame, and fully described in your Journal on July 15 last year, a process which, not having heard of from that time to the present, I believed to have been relegated to the limbo of forgotten things.

The article in the *African Review* has, however, undeceived me. It appears that the process is not dead, but has been only sleeping, and that the gentleman, whose pet child it is, or those who were and are entrusted with the duty of its nurture, are again endeavouring to rouse it from its slumbers, and make it loom large in the public eye. This being the case I make no apology for criticising on public grounds some of the pretensions to popular favour which it is claimed to possess.

On the occasion on which your representative described Mr. Hannay's so called invention I happened to be one of many others invited to inspect it, but had to share the common disappointment then expressed of seeing no practical result arrived at, for the very simple reason that the material employed in the demonstration was not refractory auriferous ore or pyrites of any description, but merely, as it appeared to me, ordinary powdered gravel or sand. In other words, the mechanical part alone of the patent was shown, the rest being left to the imagination, and upon this the encomiums of the Press and of the invited company, which the writer on the *African Review* says were afterwards showered upon the process, were absolutely based, nor, so far as I know, have there ever since been published to the world any data whatever upon which to form a judgment of its merits, in comparison with those of other well-known electro chemical processes in active operation. I freely admit that the mechanical part of the arrangement, which was shown in a tub, of the dimensions of half the size of a large beer barrel, worked to admiration, that is to say the fluent sludge formed by the sand and water representing pulverised ore, and a solution of cyanide of potassium was kept continually revolving above the mercury deposited at the bottom by means of a fan or propeller, while at the same time there was a current of electricity generated by a small dynamo, induced into the mixture, both the propeller and dynamo being driven by the same small motor. But what does that prove to me, who am more concerned with results than with mechanical methods of working? Nothing but the possibility of the adaptation of ascertained laws to what may be regarded as a slightly novel method of treatment—which, in my opinion, could never be legally claimed to constitute a patent in view of those processes already existing. What I and the rest of the community want to know is the practical outcome of the process in point of gold-producing capabilities, compared with, say, the MacArthur-Forrest patent in successful operation in Africa and Australia, and using far simpler and cheaper means to achieve the same end.

We live in sceptical times, when conviction is brought home to the minds of mankind, not by vague generalities, but by clearly defined proofs, which in this instance have not yet been forthcoming.

Let us see what the writer in the *African Review* says. He begins by stating that as the result of favourable impressions which the process made on the minds of those who saw it, a company has recently been registered to acquire the patent rights for Australasia, having at its head Mr. Wilberforce Bryant, of Messrs. Bryant and May. Had the writer stopped short at this announcement, I should not have deemed it worth while to write this letter or to even comment on the subject at all, but it is followed by a very significant passage which I am constrained to quote *in extenso*. "In this connection, it may be mentioned that Messrs. Johnson Matthey, of Hatton Garden, who occupy the leading position in the metropolis as assayers, made a series of tests (extending over months) with the plant which was in operation at 52, Queen Victoria Street, not to mention those which had previously, and which have subsequently, been carried out by Mr. Claudet, assayer to the Bank of England, with the most satisfactory results—a circumstance which, no doubt, had a good deal to do with the influencing of Mr. Bryant to assume the head of the undertaking." To say that Messrs. Johnson Matthey occupy the leading position in London as assayers is of course, a well-intended, as it may be a well-merited compliment, I do not pretend to know. As to Mr. Claudet, I was always under the impression—of course, I may be wrong—that an assayer to the Bank of England had to confine his professional services to that institution exclusively. But be that as it may, when and where, it is only reasonable to ask, were "the most satisfactory results' of these tests made a matter of public knowledge? At the time the representatives of the Press were invited to view the process at work, surely nothing could have been easier than for the inventor, or Mr. Cruickshank, by whom your representative said that "the demonstration was arranged," to carry out a real experiment by the substitution of gold-bearing material, and a solution of cyanide of potassium for sand and water, and in a day or so afterwards to make known the result.

But nothing of the kind was done, or up to the present to my knowledge has been done. What, then, is the logical inference from this I shall leave your readers to judge. It is well known that since Farraday first discovered the value of electrolysis as an aid to the recovery of gold from refractory ores, there have been several beautiful and more or less effective patents taken out to treat these materials, as, for instance, those of Barker, Molloy, and MacArthur-Forrest. Having some knowledge of these I make bold to challenge both the validity of Mr. Hannay's claim to novelty in his patent, and its superiority to the MacArthur-Forrest process. Of course, everybody who knows anything of Mr. Wilberforce Bryant knows that he is an astute man of business, and not calculated to undertake an enterprise rashly, but business capacity and technical skill and knowledge are very different acquirements, a fact which some of us have learned to our bitter cost.

Moreover, it is proverbial that you can drive a coach and four through any Act of Parliament ever put on the statute book, and the aphorism applies perhaps with much greater force to patent law, and Mr. Bryant, and those who have the temerity to follow him on the sea of troubles on which they are said to be embarking, may find themselves presently drawn into a vortex of costly litigation for infringement of patent rights, out of which they will find it more difficult to extricate themselves than they can for the moment contemplate. But, of course, that is their affair. What I wish to emphasise, meantime, is that little or nothing is known of Mr. Hannay's process, as a practical, successful, or novel one, and until something definite shall have been ascertained, and authoritatively vouched for by responsible people, it may be well for the British capitalist to keep his purse strings tight. As I have hinted, the writer of the article in the *African Review*, writing under the editorial "we," acknowledges his inability to give an opinion on the chemical or mechanical merits of the process, so that all the assertions made are based on the unsupported testimony of hearsay evidence, almost leading one to the conclusion that the article has been "inspired" by some one in the back ground, or, to use the slang of the period, "in the know"—an expedient which, I regret to say, is not infrequently encouraged, or at least winked at in latter day journalism.

Apologising for this somewhat long letter, which I feel it my duty to indite.

SCRUTATOR.

THE GRAVEL GOLD MINES.

TO THE EDITOR OF "THE MINING JOURNAL."

SIR,—I shall be obliged if you will afford me space in your columns for an appeal to my fellow shareholders in the Gravels Gold Mining Company of Colombia. It will be in their recollection that the prospectus stated that upwards of 10,000 inches of water were available for the mines—that by using 300 inches on a portion of the Rica Mine $11 (say £2) worth of gold per hour had been obtained, and that, therefore, if 3000 inches were brought to the mine a gross return of £11,000 per month would be got at a cost per month of £1000 only, thus giving the net result of £120,000 per annum. Such were the promises of the prospectus. Now let us look at the performances and at the position in which the shareholders stand.

After years of weary waiting, during which, owing to somebody's blundering and want of precision, thousands of pounds of our capital were literally thrown away, 800 inches (so I am told) of water were at length made available for washing at the Rica Mine. [May I say in parenthesis that I am told the directors have no intention of bringing on any further supply, though they were urged to raise money for this when the company was being reconstructed, but they declined, without giving any reason.] We have, therefore, brought to the mine about one-sixth of the supply of water that we were to have begun with. And what is the result of the use of that 800 inches? We simply obtain about £1 worth of gold per hour, instead of £5 worth, which, according to the prospectus, we ought to get! That is, we have about one-sixth of the water supply promised, with no hope of any augmentation of the supply, and that one-sixth gives only about a fifth of the gold which the prospectus stated would be obtained. Even if the gold returns could be doubled—and any hope of this is perfectly out of the question, as the results of the Colombian washing in the same neighbourhood show—what a pitiful return should we get for our £115,000! something like 2 per cent. after directors' fees, salaries, and office expenses were paid!

Surely it is time for the shareholders to insist on knowing exactly how they stand.

In my opinion the board ought to be reconstituted; then a perfectly disinterested expert should be sent out with instructions to ascertain (*a*) what gold the Rica Gravel really does yield per hour, with, say, 800 inches of water.

(*b*) Whether it is true that any, and if any, what further supply of water *is* available (I doubt whether any is available, for if any were, the directors' conduct is incomprehensible and suicidal).

(*c*) If, however, there really is a further supply, it should be ascertained how much there is of it, what it would cost to bring it to the mine, and how long this would take.

If 5000 inches, or even 4000, could be brought into use at no greater cost than £15,000, and within a reasonable time, it is clear to me that that is what ought to be done, for, even with the present low returns, we ought (if the returns increase only arithmetically) to get enough to pay 10 per cent. on our nominal capital, since the costs at the mine would, I suppose, be little more with the larger water supply than are now named in obtaining £500 worth of gold per month, which is at present obtained.

Unless something is done I fail to see the use of carrying on the company. It was not formed merely for the purpose of supplying the directors and officers with salaries, but as at present carried on it would do little more than that.—Yours, &c.,

"P."

"BALAGHAT-MYSORE GOLD MINES, LIMITED."

TO THE EDITOR OF "THE MINING JOURNAL."

SIR,—£73,500 in my letter last week is a mistake; the next sentence shows it ought to have been £37,500. If the reconstruction is carried and all the shares applied for (most improbable), £39,986 5s. will be provided. The liabilities are £6105 19s. 5d.; the tailings plant will cost about £10,000; £4000 was spent over the last reconstruction. Therefore, the unfortunate shareholders will have to pay up more than 2s. 6d. per share before these liabilities can be met. The debentures require £3500 a year. Less than £20,000 will be available for sinking the shafts and developing the mine!

A shareholder, at last week's meeting, told the directors that the best thing done had been the expenditure of £266,000 in making "two holes in the ground;" that the money will last barely two years; and that another reconstruction can only be averted by different management and a big reef in Tennant's shaft! The January crushing produced 288 ounces. The explanation is: "Stopes pinched." I am not surprised; comment is needless.

An influential paper accounts for a rise of threepence in these worthless shares, by "efforts made to assist in the passing of the reconstruction scheme." Any shareholder can prove the price to be merely nominal by attempting to sell a few shares at considerably less than the present quotation. It will be better to accept even sixpence a share than join the reconstruction proposed by the directors. I hope shareholders will attend the next meeting, and take action before it is too late for them to do anything but "cry over spilt milk." This unfortunate company may be described as,

"Dropping buckets into empty wells,
And growing old in drawing nothing up."

I am, &c., "BALAGHAT."

COMPANIES AND THEIR DOINGS.

Reports, Balance Sheets, Dividends, &c., of Mining, Railway, Banking, and other Companies.

MINING COMPANIES.

Don Pedro Gold Mining Company.

THE following circular has been addressed to the shareholders:—Several shareholders have applied to the board for information as to the depreciation of the Company's shares. The board of the Don Pedro Company, as in the case of all companies, has no power over the prices at which shares may stand in the market, the duties of any board being strictly and legally confined to the careful supervision and working of the company's property. It may happen in all companies, as it has happened in the case of the Don Pedro, that a large shareholder may die and the price of shares be depreciated, in view of the possible consequence of a large quantity being thrown on the market. The company's property in Brazil is now being worked in a thoroughly business-like manner, and nothing has occurred to lessen its intrinsic value. It is obvious that the insurrection in Brazil, for which the board cannot be held responsible, has had a very prejudicial effect; but this, it is hoped, may be regarded only as temporary. Since Mr. Dawson has been in charge of the company's property several changes have been made, which it is confidently anticipated will contribute to its honest and efficient development. The causes which have hindered the increase in the output during past years are in course of removal, and when the distracted country is again at peace the company will be the gainer. The board hope to receive at an early date a comprehensive report from the new mining captain in Brazil, and this will be submitted to the shareholders at a meeting which will be held as soon as the accounts, at present in the auditor's hands, are completed. The energetic management at the mine, which inspires the board with perfect confidence, will, it is fully expected, soon raise the returns to a point which will be satisfactory to the shareholders. Despite adverse and unforeseen circumstances, the returns have not only provided for the cost of working the mine, but have shown a profit which has sufficed to defray other current expenses during several months back. The latest news from the mine is that works generally are going on satisfactorily and smoothly, and the manager hopes very shortly to advise that the output has been increased.

Ophir Concessions and Exploration Company.

The directors, in their first annual report, state that since March last they have completed the sale of 100 claims to the Gold Fields of Mozambique (Limited). "The great obstacle to the success of the company has been the difficulty of communication and transit between the coast and the mining districts, and the consequent impossibility of transporting machinery of any kind to the interior. This difficulty is now, happily, being surmounted, as the Beira Railway was opened for goods and passenger traffic on October 10 last, from Fontesvilla to the terminus at the 75 mile post, and the works for continuing the line as far as Chimoio are now in progress. The directors feel it would be impossible to over estimate the advantages to be derived by the shareholders from the opening up of the country in which they hold so large an interest.

Simmer and Jack Gold Mining Company.

The report for the half-year ended November 30 last, which was submitted to the meeting of shareholders at Johannesburg on January 15, states that the accounts show a net profit for the half year of £30,798. The working expenses averaged 22s. 1·86d. per ton, against 22s. 4·69d. per ton for the previous half year.

— We learn that Mr. Leonard Tregay is now manager of the NEW DOURO GOLD MINES (LIMITED).

— The secretary of the ISLE OF MAN MINING COMPANY (LIMITED) sold on the 10th inst. 100 tons of the company's ore at £78 6s. per ton.

— The whole of the shares of the FLAGSTAFF COMPANY (LIMITED) have been taken up, the majority by the original shareholders and the balance by tender, 12,000 shares have been applied for.

MISCELLANEOUS.

— The directors of the BECHUANALAND TRADING ASSOCIATION (LIMITED) have much pleasure in informing the shareholders that the returns of the gross sales for the first eight months of the current year at the stores of the association in Bechuanaland, Mashonaland, and Matabeleland, recently received from the managers in South Africa, show a very considerable increase over the gross receipts for the corresponding period of any previous year. The accounts will be made up to the 31st March next, and it is the intention of the directors to hold the annual meeting as soon as practicable after that date, when they should be in a position to recommend the payment of a substantial dividend on the shares of the association.

UNDER the management of Mr. Pengelly, work is being actively pushed forward at the New Kleinfontein property, the supervision of the surface arrangements being entrusted to Mr. Carty. The countershaft of the mill has been lengthened, and until the surplus power developed by the engine is required for additional stamps, it will be utilised to drive the Gates crusher at the breaking station adjoining the mill, as also the machine tools in the new fitter's shop. This is now almost complete, and, in view of the out-of-the-way position of the property, is likely to prove of considerable service.

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Coal for the Royal Arsenal, Woolwich, Royal Small Arms Factory, Enfield Lock, and the Royal Gunpowder Factory, Waltham Abbey.

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Separate Forms of Tender, showing the approximate quantities and the descriptions required, may be obtained on personal application at this Office or by letter addressed to the Director of Army Contracts.

For any further information as to mode of delivery, &c., application should be made to the Director General of Ordnance Factories, and the Commissary General of Ordnance, Royal Arsenal, Woolwich, respectively.

The tenders are to be delivered at the War Office, Pall Mall, S.W., by 12 o'clock noon, on Monday, the 5th day of March, 1894.

G. LAWSON,
Director of Army Contracts.

War Office, Pall Mall, S.W., 13th February, 1894.

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R. C. CHAMBERS, Manager Ontario Mine, Utah.
WILLIAM C. RALSTON, Secretary (Secretary California Miners Association).
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HEAD OFFICE — MILLS BUILDING, SAN FRANCISCO, CAL.

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It is not intended only to negotiate the sale of an entire property but interests in such may be sold or money obtained for development work.

This Company especially solicits the business of making reports or examinations for non-resident mine owners on any of their mines in the United States, and obtaining special information as to their condition and so forth (said reports being confidential).

Those who conduct the business of the Company have had long experience in mining operations, and it is their intention to place the Company in a position to inspire the confidence of all who seek its assistance in its integrity and fair dealing.

We respectfully refer to any Bank in the City of San Francisco and to the Anglo-Californian Bank (Limited), London, as to the standing of the Board of Directors of this Company.

Descriptions of properties for sale with maps, reports and all necessary information, are left on file in the office of the Company. Abstracts of such reports with prices of mines will be furnished upon application.

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CONTENTS

Of this Number of "The Mining Journal, Railway and Commercial Gazette," February 17, 1894.

NEW PATENTS ... 169
CONTRACTS OPEN ... 169
OUR INQUIRY COLUMN ... 163
MECHANICAL ENGINEERING, &c.
An Improved Portable Drilling Machine ... 170
SPECIAL CORRESPONDENCE: Colonial and Foreign.
Mining in Asturias (Spain) ... 170
TIN TICKETING ... 170
THE MINERAL WEALTH OF HUELVA ... 171
NEW ISSUE ... 171
COMMERCIAL MINING ... 171
SOCIETY OF ENGINEERS ... 172
SPONTANEOUS COMBUSTION IN COAL MINES ... 172
MEETINGS OF MINING COMPANIES—
Polberro Mine Company ... 173
The Arizona Copper Company ... 175
OUR BOOK CASE ... 175
CORNISH MINING: CAN IT BE REVIVED? ... 175
PHOTOGRAPHY IN MINES ... 175
THE OIL SHALE INDUSTRY OF FRANCE ... 176
THE EDITOR'S LETTER BOX ... 177
COMPANIES AND THEIR DOINGS ... 177
LEADING ARTICLES—
The Revival of Gold Mining ... 178
Polberro and the Future of Home Mining ... 179
NOTES AND COMMENTS ... 179
OUR CITY ARTICLE ... 180
PUBLICATIONS RECEIVED ... 181
MINING NOTES ... 181
FORTHCOMING MEETINGS ... 181
THE METAL MARKETS—
The London Metal Market ... 181
"THE MINING JOURNAL" SHARE LIST ... 182-183
MINING IN CORNWALL AND DEVON ... 183
LATEST FROM THE MINES: Cablegrams and Telegrams ... 183
REPORTS FROM THE MINES ... 184
NORTH OF ENGLAND INSTITUTE OF MINING AND MECHANICAL ENGINEERS ... 186
GEOLOGY OF THE WEST YORKSHIRE COAL FIELD ... 187
PROVINCIAL SHARE MARKETS ... 188
ADVERTISEMENTS—*(See Index to Trade Advertisements, p. 166).*

LONDON: FEBRUARY 17, 1894.

THE REVIVAL OF GOLD MINING.

THERE are many circumstances in the current position of the Stock and Share Market which encourage the hope of a revival in gold mining enterprise after a long period of stagnation. In the first place the tone of finance generally is undergoing a perceptible improvement, and this feeling of confidence, if properly taken advantage of, cannot fail to extend to the mining market. Although a great change has taken place in this respect of late, the position of mining investment is still largely dependent upon the course of affairs in other classes of security. The Bankers' Clearing House returns, while they bear witness to the lack of business transacted upon the Stock Exchange, are at last beginning to show signs of a larger volume of affairs in the trade and industry of the country. Such an improvement is bound to exert an influence upon financial circles, and the mining share market is peculiarly affected by the operation of speculators who only begin to talk about "bulls" and "bears" when some special activity in trade provides them with extra capital for outside investment. For a long while past the mining market, and more especially gold mining shares, have been unable to make headway in the absence of movement in other branches, and the values of gold scrip have consequently been much below what may be reasonably considered a fair level. It is not unnatural, therefore, to expect this branch to be among the first to respond to a general upward movement. To a limited extent, in fact, this recovery is already being experienced. The demand for South African gold shares is perceptibly stronger, and financiers are preparing to launch many new ventures in this direction. There is no doubt the "Kaffir circus" offers a most attractive field for investment, and the wonder is that the tendency towards recovery to which we refer has not proceeded upon a more extensive scale. The explanation of the delay is, of course, that the British public is at the same time timid and rash in its speculation, and that it often prefers to embark recklessly upon new enterprises rather than adventure more wisely upon undertakings in which it has already suffered the penalties of imprudence. Randt mines have been the occasion of some of the most remarkable examples of fraud and mismanagement that have ever been perpetrated, and the memory of these is powerful even against the inducement of huge output and swelling dividends. Moreover, the financial air of the South African Gold Fields is not yet perfectly clear though we hope that the past two years of stagnation have taught directors there the wisdom of treating the British public fairly. Some very recent transactions in respect to the buying and selling of claims have not been reassuring, and the policy of reconstruction on only half-explained terms is continued in a way that is hardly satisfactory to shareholders. If by some reform in the present system of auriferous mining these latter were able to feel that they are perfectly in touch with what goes on in South Africa there is no doubt that they would be quite ready to invest a considerable amount of new capital in the industry. Something may be done towards this end by the appointment of an official representative in London of the Witwatersrandt Chamber of Mines, and it is to be hoped that full use will be made of this functionary in the interest of the gold mining industry on the Randt. He may serve to inspire the feeling of confidence which is essential to anything at all like a "boom" in Kaffirs. It is all very well to say that the financial magnates who are the props of the Randt have it in their power to induce a heavy rise in most of their shares. There are now too many difficulties in the way of "rigging" the market. In the first place, the Randt magnates themselves must have suffered heavily over the persistent withdrawal of the public from purchasing, and the operators are already so hampered with South African scrip that they can hardly take any more. The hope of a "boom" must depend upon a revival of confidence among the general public.

There are many reasons why such a feeling should revive, for the South African gold mining industry has reached a position which even its most ardent supporters could hardly have foreseen. The work of the past two years has established beyond a doubt the possibility of making low grade ore pay, and the existence of practically inexhaustible reefs of quartz in South Africa opens up an almost inconceivable future for the industry. In place of the rough methods which at first made the Randt a bye-word amongst mining authorities the most advanced and scientific system of treating ore has now been established in the Transvaal. What is more, the development of the industry, and its methods already achieved has conclusively shown the vastness of the progress yet to be made. It can almost be said that it has proved the absence of any irreducible minimum in the cost of winning gold. The well-managed mines on the Randt are getting results from low grade ore that must be encouraging to gold miners and investors all over the world. Provided that too much money is not paid for properties in the first instance, and that the standard established in the management of successful mines is maintained, there is a field for the profitable employment of an almost limitless capital in the Transvaal. One direction in which we think reform will take place largely will be amalgamation instead of reconstruction in the case of non-paying properties. The example for this has already been afforded by the Sheba Company and Moodie's on the De Kaap field, and there is no question that it may be followed with advantage on the field of which Johannesburg is the centre. The working of deep levels will also be carried on more extensively, and capitalists will be invited to spend heavy sums in their development. This, however, is a class of mining which can hardly be expected to attract the ordinary investor. There is no doubt that deep levels will furnish an enormous proportion of the world's gold output, and will provide a remunerative return upon a system of working not less Brobdignagian than that employed in the coal industry at home. But, naturally, with an enterprise which depends for success upon the employment of huge and costly plant it must be a long while before anything like substantial results will be obtained. Gold mining shares in the future, therefore, should assume quite a new character as scrip to be held for the sake of the ultimate return. This would be an incalculable advantage in so far as it would remove gold mining from the undue influence of fluctuations on the financial markets, and would give to it a basis of stability upon which it could develop more steadily than it has hitherto done. Apart from the benefits that are accruing to the investor, the growth of the Randt industry is an excellent thing for mining engineers and makers of mining machinery, who may expect to see their respective interests become settled upon a permanent basis. It is to be hoped that English engineers and manufacturers will prove themselves equal to the position by a policy of continual progress which will keep them abreast, if not ahead, of their foreign competitors. They already have the immense advantage that the greatest part of the capital invested in gold mines, and the financial direction of gold mining enterprises, are in the hands of their compatriots. The skill of British engineers has been a considerable factor in the develop-

ment of the mining industry throughout the world, and there is no doubt that manufacturers of gold mining plants will be able to show that the country's mechanical resources are in no way behind its scientific and administrative capabilities.

The progress on the Witwatersrandt is certain to produce a wave of activity over other goldfields in South Africa, as well as in Australia, America and elsewhere. Outside the Randt there is room for the application of methods which have helped to raise that district to the position of the largest producer of gold in the world. The De Kaap fields have not enjoyed any particular degree of favour among investors, but the news of the impending connection of that field with the sea should do much to attract enterprise anew in that direction. Then there is declared to be an extensive banket formation, identical with that of the Randt, upon the borders of Zululand and the Transvaal. No doubt exists either as to the presence of large deposits of gold in Matabeleland, and a great deal of money has lately been subscribed in London for the working of them. In Mashonaland the experience already gained seems to justify a heavy expenditure upon the laying down of crushing plant, so that when operations have begun in this and other districts the gold mining industry of South Africa gives promise of improving vastly upon its present satisfactory position. In Victoria and New South Wales also the lesson of the South African policy is causing increased attention to be paid to the low grade deposits, and there is certain to be a heavy increase in the yield of gold in these colonies. Western Australia has, singularly enough, received very little support from British capitalists, notwithstanding the fact that the colony has long been known to be very rich in auriferous deposits. The discovery of a new gold field, of the value of which *The Mining Journal* has given strong proofs, should once more call attention to the abundant resources of Western Australia, and with the experience gained in the Transvaal it ought to be possible to reawaken the traditions of the Land of the Golden Fleece as a producer of the precious metal. The want of enterprise which British capitalists are showing in our own possessions in North America is being turned to good account by United States' capitalists, who are spending a great deal of money and energy in the development of the gold resources of British Columbia. Until these deposits are opened out, and American capitalists have had time to "pick out the eyes" of the country's auriferous wealth, investors at home will not think it worth their while to place any money in this industry. They prefer to take a share in stupendous enterprises that frequently offer greater risk and smaller dividends than those undertakings so much in vogue among United States' speculators who prospect for gold and work their claims upon an economical basis. In countries like British Columbia, where this method is the only satisfactory one, it ought to receive more favour than it does at the hands of British capitalists. In any event, whether these deposits are developed by the aid of United States' or English capital, they are certain at no distant date to be worked upon a more extensive scale. Indeed, it seems more than probable that as soon as the trade revival assumes anything like consistency there will be a veritable boom in auriferous mining. The conditions are most favourable for it. Every month almost the possibility becomes greater of earning dividends out of what has been considered unpayable stuff. Technically, gold mining has experienced a revolution during the past few years. Financial direction will have to undergo a corresponding reform, unless those fields, which are still subject to questionable management, are to be ignored in favour of others.

POLBERRO AND THE FUTURE OF HOME MINING.

As interest in Cornish mining has been awakened during the past fortnight—natural circumstances having made attempt to rouse it from its slumbers—and as at the present moment much speculation is indulged in as to the possibility of its revival, we may consider, with advantage, though briefly, the nature of the Polberro meeting last Friday week, and the opinions there expressed upon the future probabilities of this important home industry. We have designedly given a somewhat large proportion of our space to the report of the meeting, but we have done this, as we consider, in the interests of Cornish mining, which so many lament to see in a languishing condition, yet one from which, in the further opinion of many, it could extricate itself by the aid of judicious management. Speaking, first of all, of the present position and prospects of the Polberro Company, it cannot be denied that last Friday week's meeting was one of the most successful ever held in the history of the concern, nor have so many unanimous opinions been expressed in one afternoon respecting the future possibilities of the mine. There is no need to make any reservation on that point. Whether those opinions are well founded on present indications is quite another matter. It is well known how purely speculative mining is; it is well known how frequently appearances have been deceptive; and it is equally a matter of knowledge that we must not pin our faith unreservedly to this or that promising point. As for appearances and indications, the Polberro Mine would appear to be extremely well off, and if they turn out to be what the shareholders hope for, and what is even predicted, then there can be no question as to the brilliant future which awaits the undertaking. Every mining company must, of course, go through a long and dreary period of waiting. This is the necessary prelude not only to success, but to failure. The richest and the poorest have all had to experience this time of anxiety. This circumstance, of course, is in favour of Polberro, as of any mine. Its probation period has already extended over a considerable time, and, though appearances favour it, no one can prophesy with certainty that that period is fast drawing to a termination. Attention and hope are directed, and have been for some time now, to the 26 end west, which during the last five months has yielded 74 lbs. of tin to the ton of stuff. Captain CHARLES THOMAS—and Polberro is very fortunate in its manager—thinks there is every chance of this end continuing. He desires to push on the level as rapidly as possible to see the junction of the Callow and Pink lodes at the cross course before them, and to see whether the lode will continue; if so, it will be a very important feature in connection with the mine. The 26 fathom level east is likewise an encouraging point, branches varying from 3 to 4 inches wide having been met with, containing very rich tin. The lode here is stated to be well-defined, and to be from 4 to 5 feet in width. Altogether, Captain THOMAS speaks most encouragingly of the future, and as he is known to be a cautious man, and invariably guarded in his language and opinions, there is much ground for hope in this. A continuation of the present condition of things will, he says, lead into a very good mine; nor does he see any reason why the improvement should not continue. This opinion was endorsed by the Chairman (Mr. REYNOLDS), Mr. HANCOCK, Captain HARPER, and Captain HOOPER, all of whom look forward to handsome results. The inevitable call was made, of course, but this was more a matter of policy than necessity. Mr. REYNOLDS has adopted a system of "no debts," which other Cornish companies should endeavour to emulate, for it would greatly enhance the reputation of Cornish mining, and would do not a little to attract the much-needed capital into the county. It is not our desire here, of course, to draw attention to the remediable defects from which the industry suffers. There is a time and a place for everything, and though this were one of the easiest things in the world, we will not attempt it now. Suffice it to emphasise what we have just said, that the "carrying-out of the cash system in its purity," as one speaker described it, would not be without benefit to the industry which Cornishmen desire to see in a flourishing condition.

We confess there is an obstacle in the way of reviving home mining most difficult to surmount, and which as long as it exists will have a detrimental and depressing influence upon the industry. We allude, of course, to the low price of tin. To say the least, this is unfortunate, but it is an incubus for which nature alone is responsible. No doubt, were the price of tin much higher than it is, we should have very little to complain of. Profits would be made where now losses are incurred, and prosperity would gloss over the indiscretions and evils which gloom—seemingly contrary to his function—makes apparent. The vital question is: Can we hope for a better price? and, if so, when may we expect it? Can we see any indication, by searching diligently and intently, of such a happy turn in the tide? If we believe in the opinions expressed at the meeting of Polberro we will unhesitatingly answer these questions in the affirmative. If, however, we are inclined to put a discount upon sanguine utterances—for many will, no doubt, conclude them to be such—we shall have made but little progress. Had Mr. STRAUSS been present—his absence was naturally regretted—we should have heard something interesting. Mr. MICHELL alluded to the fact that Straits tin was quoted at about 70. He remembers the time when it was quoted at 58. If we can survive such a quotation as that we can survive anything. He has no fear of Cornish mining. He knows copper and lead mining is done, but he sees no signs of tin mining being played out in the county. Mr. REYNOLDS has no doubt tin will right itself again. He hopes that happy day will come soon. Everything is going on all right, and we have no ground whatever for despondency and discontent. Mr. CLINTON was equally as hopeful. In spite of the discoveries abroad, Cornish mining still exists, and he believes there is a bright future before it. The visible stocks of tin have decreased more than 2000 tons, and a remarkable feature as to consumption is that the deliveries in the past 12 months exceeded those of the previous year by 10,000 tons. Mr. BULLER, again, expressed his conviction that though tin is down now it is sure to rise again. It is to be hoped the predictions of these gentlemen will be realised, and that in the no distant future the price of tin will go up, that Cornish mining will be prepared for it, and that it will be the beginning of another era of prosperity.

NOTES AND COMMENTS.

We may cast our eyes back upon the past week with feelings of pleasure, for in every direction in which we look we see some indications of improvement. The most conspicuous illustration of this has been furnished by the Mining Market, which has displayed most marked activity all round. No doubt the Rand output for the first month of this year, which establishes a record, has had a great deal to do with it. This firmness has not been confined to the South African section of the market, for the Indian and miscellaneous securities have been almost as buoyant. The Stock Markets, too, have experienced a time of prosperity, whilst another phenomenally strong return has been issued by the Bank of England. The reserve has increased during the week by £835,314, and its proportion to liabilities is now 59·08 per cent., against 58·68 per cent. a week ago. The total stock of coin and bullion in both departments has increased by £525,224, and amounts to the large sum—for this country—of £28,972,693. Notwithstanding this improvement in the strength of the Bank, the directors, contrary to expectation, have made no alteration in their standard for discounts. One conspicuous feature of the week has been the lack of mining company meetings, although at this time of the year we may, with certainty, expect a dearth of them. It is to be hoped the improvements of the past week will be continued throughout the next, so that we may look forward to its being the gradual, yet persistent advance towards the better times for which all are longing.

THE Employers' Liability Bill has presented a problem to the minds of many which they find difficult to solve. The Bill, as is well known, is framed to protect the working man by diminishing the risks which he runs whilst forcing his employer to give him greater protection and security. It is supposed to consult and meet the wishes of the majority of the workmen all over the country, but it is precisely in this connection that its greatest obstacle lies. Does the Bill satisfy an assumption on the part of the would-be benefactors of the artisan, or is it founded on real and unmistakable evidence? To obtain a true solution of this the surest way would be to obtain the individual wishes of every working man in the country, but as this is impossible we have to decide upon their collective opinions. These latter have been expressed not only frequently, but energetically, yet, notwithstanding all these efforts, we have made but little progress. Those who favour the Bill and those who disfavour it seem divided in pretty equal numbers. In such a dilemma a circumstance of significance would be most welcome, and such a circumstance *The Times* brings forth to the light. We quote their remarks in full.

"A REMARKABLE fact, illustrating the view taken of the Employers' Liability Bill by a large number of the more intelligent miners, has been brought to our notice. The Monmouthshire and South Wales Miners' Permanent Provident Society is an institution formed under the Friendly Societies Acts, which obtains its members from the chief mining districts of South Wales, including many important collieries, several of which, such as the Risca, have acquired an unhappy notoriety in consequence of fatal, explosions and other accidents. This society possesses 182 agencies and a certificated copy of their returns of membership for the quarters ended September and December, 1893, is now before us. The numbers are—in the September quarter, 58,995, and in the December quarter, 63,182, showing an increase of 4187, or about 7 per cent. In the case of 22 agencies a decrease is shown amounting to 639 members, the most considerable being in that for No. 4 pit, Ferndale, where the membership has fallen from 699 to 398. This change, however, looks like a transfer, in part at any rate, to adjacent agencies, for No. 2, Ferndale, shows an increase of 204, and No. 5 an increase of 52. The decreases are, however, so trifling when compared with the increases, that it is impossible to resist the conclusion, so far as this very considerable body of miners is concerned, that opinion among thrifty men engaged in one of the most dangerous of employments is that the advantages to be obtained through the existing provident institutions are much greater than the privileges offered in the Government's Bill. To men of the class which support such societies as this the advantage of being able to harass and sue their employer for injuries received in the performance of work done for him may well seem poor compared with membership of a society to which the local employers contribute largely. It is especially remarkable that this great increase of 7 per cent. for the quarter should have taken place simultaneously with the debates in Parliament on the question of permission to men to contract themselves out of the Act when passed. Apparently, the Welsh miners prefer their bird in the hand." What significance should be attached to this will, no doubt, be fully considered.

TRULY the British shareholder is a long suffering person, or we should hear much more than we do about the very inconsistent relation of work to pay in the case of London directors of mining companies. Often enough the English board is supplementary to a local directorate, a consulting engineer, and a manager, and its members' share in the carrying on of the mine is absolutely nothing. Their purpose in existence is simply to induce public subscriptions in the first instance, and for this service they go on drawing comfortable annuities indefinitely. A London board is an excellent institution when it really fulfils the functions of a supervisory committee upon the operations of men too far away to feel the direct pressure of English shareholders, but too frequently gross mismanagement goes on at the mine, while the directors in the City are blissfully ignorant of anything wrong. A little judicious "heckling" by shareholders of such purely ornamental directors would do a great deal to improve the position of several mining companies we wot of. And we certainly think that directors at home should sacrifice some portion of their fees while the capital of a company is being spent on development work.

ONE of the incidents of that revival in the mining share market which has been anticipated so long is to be the flotation of companies to take over a number of deep-level properties on the Witwatersrandt. The negotiations already in progress between the claim-holders and capitalists over here have been retarded by the unduly high value placed by the former upon what they have to sell. This is a grave error of judgment. It is useless to expect that history will repeat itself in the case of Transvaal gold mining, and over-capitalisation is no longer a likely error for British investors to fall into. Too grasping a policy on the part of the promoting syndicates in South Africa is likely to direct British speculation into other channels, of which plenty will certainly be provided once the promised financial revival comes. In the meantime, English investors may be advised to study the purchase-price of any new deep-level property which is put upon the market.

THE recent lecture of Mr. W. Hughes upon Photography in Mines follows very aptly upon the publication of the handsome volume of Cornish mine photographs which the profession owes to Messrs. Burrow and Thomas. That a good deal of interest has been awakened in this application of the photographic art is clear. Indeed, the topic was one which came in for some considerable discussion at the recent dinner of the School of Mines, and must have occurred to more than one guest when one of the speakers spoke of a similarity between the conditions at the

DEFECTIVE ORIGINAL

bottom of Dolcoath and those of a Turkish bath. At the same time it may be well to caution the student against supposing that photography is anything like a satisfactory substitute for a personal inspection. The appearance of a passage in mine scenery depends pretty much upon the spot selected by the photographer for the *locus* of his camera. His artistic instincts may occasionally come into conflict with his desire to portray things as they are, and result in a compromise hardly conveying precisely the impression which would arise upon an actual journeying down to a low level in the mine. One could hardly fail to be struck with the judgment which Mr. Thomas exercised in choosing his sites when photographing for the album bearing his name. It is obvious that he has effected a very happy medium between the photographer whose mission is Art, and the photographer whose mission it is to represent the actual.

THE subject of the utilisation of Cleveland ironstone as the basis of mild steel plates for shipbuilding is one which has occupied attention for several years past, and the reference to the matter, made by Sir Joseph Pease at Stockton-on-Tees last week, and in his subsequent remarks at Guiseborough, have not so much opened a new vein as directed attention afresh to an old one. There is, however, a new phase of the matter, and this is a fact which has now transpired that the Admiralty have recently officially approved steel plates made by Messrs. Bolckow, Vaughan, and Co., at the Eston Steel Works. Cleveland pigs made from Cleveland ironstone have been made into basic steel plates with the result mentioned. Two mixers, capable of dealing with 4000 tons per week, have been erected, and one of these has been at work for several months. The molten pig is conveyed to the mixer from the various furnaces, and is then desulphurised by the aid of manganese and some other ingredients. The Eston firm are now taking down a steel rail mill and putting a light plate mill in its place, to enable them to deal with various classes of steel plates. The new process appears to be an improvement upon or a development of the now well-known Saniter desulphurising process, which was brought out by Mr. E. H. Saniter, of Wigan, towards the end of the late Durham coal stoppage. The chemicals used are, however, different, and the results are stated to be more satisfactory. In the Saniter process the chief dephosphorising agent is a mixture of calcium chloride and lime, which will fuse readily at the temperature of the cast iron to be operated upon. About equal parts of each are reduced to a moderately fine powder, pressed down in the bottom of the ladle and consolidated by heat. When the ladle is filled with metal the mixture melts, and permeating the metal, removes sulphur and other impurities.

IF all that is claimed for the new process is found commercially practicable, then, indeed, there is cause for congratulation, and the result on the Northern iron ore and steel industry should be considerable. Hitherto, the Siemens-Martin plates have had "the full" in the North, but now that the Admiralty have given their sanction to the employment of those made by the method indicated, we ought to hear more of Bessemer basic steel thus produced. We scarcely think, however, that those North of England commercial men who are interested in Spanish ironstone mines need be greatly alarmed, for so great is the scope for the use of steel that there should be plenty of room for both Siemens-Martin and Bessemer, and so long as the former continues to be used so long will there be a demand for good hematite, pig iron, and consequently for Bilbao and other Spanish ore wherewith to make it.

TO-DAY (Friday), if prior arrangements are carried out, a meeting of Durham coal owners will be held to consider the question of a minimum selling price. If five-sixths of the owners agree to this course, no gas coal will in future be sold under a minimum figure ranging from 7s. 3d. to 7s. 9d., according to quality. This is certainly a move in the right direction, for there is no denying that much of the trouble lately in various departments of the English coal trade has arisen from large colliery companies accepting contracts at ruinously low prices, and it is really high time something was done to mend such a state of things. The present movement, therefore, should do good — provided that the minimum is not fixed at a price which will injure consumers or let in foreign competition. The figures mentioned seem fair and reasonable, and we hope the requisite majority will be secured, and—which is a still more difficult task—that the agreement will be faithfully adhered to. The price of 6s. 3d. per ton, at which it is stated that some large forward contracts with gas companies have lately been entered into is surely too low to afford a reasonable profit to the colliery companies if they are to find their men a fair wage, and thus avoid trouble with them.

CARDIFF AND SOUTH WALES COAL AND IRON TRADE REPORT.

CARDIFF, Friday Evening.

OWING to the stormy weather which prevailed in the early part of the week the coal trade has been inactive, but now that the climatic conditions are more favourable, tonnage is arriving in large quantities and the demand is improving. Ruling prices are:—Best steam coal, 13s. to 13s. 9d.; Monmouthshire, 11s. 6d. to 11s. 9d.; dry coal, 11s. 3d. to 11s. 6d.; small, 6s. 6d. to 7s. per ton; patent fuel, 12s. 6d.; best house coal, 14s. to 14s. 6d; No. 3 Rhondda large, 13s. to 13s. 3d.; No. 2 large, 10s. 3d. to 10s. 6d. per ton. The demand for coke has fallen off appreciably. Foundry is quoted at 18s. to 19s., and furnace 16s 6d. to 17s. per ton. Pitwood stocks continue heavy, ordinary pit props are quoted at 14s. 9d. Market weak. There is very little doing in steel rails, and there is no improvement in the demand for tin plates, while enquiries for steel bar has slackened materially.

WE learn that Mr. Carl Meyer, of Messrs. N. M. Rothschild and Sons, has joined the board of the Burma Ruby Mines (Limited).

OUR CITY ARTICLE.

FRIDAY EVENING.

THE MINING MARKET.

A prosperous week for Kaffirs and Land shares.—Improvements all round.—A record Randt yield.—Indians and Miscellaneous active.

THE past week in the Mining Market has been distinguished by almost abnormal activity. The South African department has especially attracted a considerable amount of attention, though much business has been reported in almost every branch. There are very few falls to record, but those are due to especial causes, such as the fall in silver or a smaller yield. We have received news this week of another record Randt output. There can be no doubt now of the wonderful wealth of this part of the world. The gold is there, and it only needs the application of scientific methods to demonstrate it more forcibly. The cyanide process, as on previous occasions, has been the most instrumental factor in this latest yield. If any evidence were wanting of the value of this process it is furnished by these wonderful results. The news was received, fortunately, at the beginning of the week, and, no doubt, it has been the cause of the active business transacted in gold shares of South Africa. The market opened strong on Monday under the influence of this announcement, and dealers gladly welcomed the first signs of a revival. Making up prices on that day showed some important advances. City and Suburban rose from 11⅜ to 12⅛; Village Main Reef, 3 1/16 to 3 1/16; Consolidated Gold Fields, 1 13/16 to 2⅛; Ferreira, 8 to 8⅜; Jumpers, 3⅛ to 3¾; Meyer and Charlton, 5¼ to 5 5/16, ex dividend of 4s.; Primrose, 3 1/16 to 4 1/16; Nigel, 2 15/16 to 3 1/16; Rietfontein, 2 7/16 to 2⅝; Simmer and Jack, 3⅞ to 4 5/16; Knight, 12s. 6d. to 16s.; De Beers, 14⅞ to 15 3/16; Jagersfontein, 14¼ to 14½; Oceana, 1 7/16 to 1 9/16; Chartered, after much fluctuation, made up 1/16 better than before. Shebas effected a rise of ⅜. As soon as the carrying over was completed activity spread to every section of the market. The buoyancy was general, only one fall having to be recorded, and that almost nominal. Glencairns advanced to 30s., a movement justified by the return, which showed a yield of 3004 ounces, against 1606 in December. The improvements have been general and persistent in most of the shares, and the market closed with an under-current of firmness. Randt securities have been equally as buoyant as gold shares, there having been a strong demand for most of these descriptions. The Indian and miscellaneous market has likewise displayed considerable activity. Indians have been strong and firm all the week, Champion Reef, Ooregum Preference, Gold Fields of Mysore, Mysore Reefs, and South-East Mysore being enquired for at better prices. Golden Gate, Wentworth Ordinary, New Queen, and Day Dawn Block have also been in demand, and are quoted higher. Broken Hill Proprietary shares have also recovered from the depression, and now command better prices.

British Mines.

The drop in tin has somewhat interfered with the demand for Cornish shares which was experienced last week. Holders are, however, by no means disposed to sell and there is a general impression that the low price of tin now ruling will not last for any lengthened period. Dolcoath have been steady at 70 and it would be very difficult either to buy or sell many at the price. Killifreths close 3¾, but during the week a good many shares have changed hands from 77s. 9d. down to 75s. The prospects at the mine are encouraging. South Crofty are steady at 40s., at which there have been a few transactions. The bottom of the mine is opening up well. Tincroft are dull at 11½. West Kitty are quiet at 7⅜, but not many offering. Wheal Agar are dull at 50s., and Wheal Grenville are nominally £15½.—Risen: West Frances, 2s. 6d.—Fallen: Carn Brea, 10s.; Tincroft, 5s.; Wheal Agar, 5s.

South African Shares.

Fortunately, some most encouraging news was received in the early portion of the week, announcing a record output from the Randt for the first month of the year. The consequence was very active business in this market. Carry-over arrangements, of course, occupied the first part of Monday morning, but after those were completed there was activity in every part of the market. The making up prices exhibited some important advances. There was a gain of 1 in City and Suburban, ⅛ in Jumpers and New Primrose, ⅛ in Oceana Land and Village Main Reef, 1/16 in Simmer and Jack, ⅛ in Ferreira, Sheba, and Exploring, and 1/16 in Meyer and Charlton, De Beers, and Consolidated Gold Fields. The result of the after business was an advance of ¼ in Crown Reefs, Jubilees, and Cities. Wolhuter improved 5-32, New Reits ⅛, Wemmer and Worcester 1/16. Smaller gains were registered in May Consolidated, Langlaagte, Modderfontein, New Chimes and one or two others, including Sheba. Land shares were as strong as the Kaffirs and were in active request, Chartered especially so. Diamond shares, however, were not very active, notwithstanding that both De Beers and Jagers rose ⅛. The tone on the following day was greatly improved, and there was a further advance in prices, the movement being, in most cases, sharp and decisive. Owing to a satisfactory return, showing a considerable increase, Village Main Reefs advanced 1/16, whilst an improvement of ⅛ took place in Simmer and Jack and New Chimes. Crown Reefs, Robinsons, Spes Bona, Worcester and United Roodepoort all shared in the upward tendency. On the other hand Cities, Ferreira and Geldenhuis Deep were the turn weaker. In Land shares there was a considerable activity. Oceanas advanced to 2¼, whilst rises occurred in Zambesias and Explorings. Chartered, without any fluctuation, closed 3d. better. Diamond shares were unchanged. The upward movement continued throughout Wednesday, and a display of animation was noticeable in every direction. Both in Land and Kaffir descriptions a buoyant tone prevailed, and throughout the day Throgmorton-street was packed from side to side. Cities, Meyer and Charlton, George and May, Crown Reefs, Ferreira, Goldenhuis Deep, and one or two others were in demand with improvements. On the other hand Rieta, Primrose, Villages, Nigel, and Simmer and Jack were easier. Chartered were taken up to 29s. 9d., Consolidated Gold Fields rallied ⅛, and Oceana Land, and Bechuanaland 1/16. Diamond shares were flat, both Jagers and De Beers showing a decline. The all-round activity has continued right up to the end of the week. Gold Fields have been particularly buoyant, and the run on land securities has given no signs of ceasing. Indeed, there is every prospect of a continuance of the upward movement. The following are the week's changes. Risen:—African Gold Recovery, 2s. 6d.; Bantjes, 1s. 6d.; Barrett, 6d.; Bechuanaland, 3s. 9d.; Block B, 1s.; Central African Zoutpansberg, 6d.; Chartered, 4s. 6d.; City and Suburban, 17s. 6d.; Consolidated Gold Fields, 6s. 3d.; Crown Reef, 7s. 6d.; De Beers, 2s. 6d.; Exploration, 2s. 6d.; Exploring, 15s. 6d. (allowing for dividend); Frank Johnson, 2s. 6d.; Geldenhuis Deep, 2s. 6d.; ditto Estates, 2s. 6d.; ditto Main Reef, 1s. 6d.; George and May, 2s. 6d.; Glencairn, 1s.; Gold Fields of Mashonaland, 2s. 6d.; Henry Nourse, 2s. 6d.; Heriot, 5s.; Jubilee, 8s. 6d. (allowing for dividend); Jumpers, 6d. (allowing for dividend); Lisbon Berlyn, 9d.; Luipaard's Vlei, 1s. 6d.; Main Reef, 6d.; Mashonaland Agency, 2s. 6d.; May Consolidated, 6d.; May Deep Level, 2s.; Modderfontein, 1s.; Moodies, 6d.; Mozambique, 6s. 3d.; New Chimes, 2s. 6d.; New Jagersfontein, 7s. 6d.; New Primrose, 1s. 6d. (allowing for dividend); Northern Transvaal Land, 1s. 6d.; Oceana Development, 5s.; Oceana Land, 17s. 6d.; Orange Free State, 5s.; Paarl Central, 2s.; Randfontein, 6d.; Read's Drift, 4s. 6d.; Robinson, 1s. 6d. (allowing for dividend); Roodepoort Kimberley, 4s.; Sheba, 6d.; Silati River, 2s. 3d.; Simmer and Jack, 2s. 6d.; South African Exploration, 5s.; South African Gold Trust, 3s. 6d.; South African Trust and Finance, 6d.; Southern Land (15s. paid), 2s. 6d.; ditto (fully paid), 1s.; South Simmer and Jack, 1s. 3d.; Spes Bona, 2s. 6d.; Transvaal Estates, 1s. 6d.; ditto Exploration, 2s. 6d.; ditto Land (15s. paid), 1s.; ditto (fully paid), 1s.; Village Main Reef, 12s. 6d.; Wolhuter, 2s. 6d.; Worcester, 7s. 6d.; Zambesia, 15s.—Fallen: Griqualand West, 3s. 6d. (allowing for dividend); Johannesburg Estates, 6d. (allowing for dividend); Pioneer, 5s.; Rietfontein, 5s.; United Ivy, 9d. (allowing for dividend); Witwatersrand (Knight's), 6d.

Indian and Miscellaneous.

Although this market cannot boast of any inducement to active business, the tone early in the week was strong and buoyant. Indians displayed an improvement all round, whilst among other miscellaneous securities a recovery of 1/16 took place in Broken Hill Props, and of ⅛ in Tolima A. A harder tone was displayed by Columbian Hydraulic and Orita, whilst Wentworth, New Queen, and Poorman were enquired for at better prices. Amongst Copper shares an improvement of 1/16 took place in Rio Tinto. On the following day this market was still more active, and the general outcome of business was a record of higher quotations. Amongst Indians, Mysore Reefs were strong all day. Gold Fields displayed a better tone, and South East Mysore and Nine Reefs were firm. Rio Tinto recovered a further ⅛. This market was again active on Wednesday. Indians were firm, the chief business being done in Gold Fields. Broken Hill Proprietary relapsed 1/16. Rio Tinto were down ⅛. As in the South African market, brisk business has been transacted in miscellaneous right up to the close of the week. There are many elements of strength visible, and the basis for improved values is seemingly well set. The following are the week's changes:—Risen: Brilliant, 2s. 6d.; Broken Hill Proprietary, 4s. 9d. (allowing for dividend); Carrington, 1s. 3d.; Champion Reef, 3s. 9d.; Colombian Hydraulic, 2s. 6d.; Coromandel, 6d. (allowing for call); De Lamar, 6d.; Don Pedro, 6d.; El Callao, 2s. 6d.; Elkhorn, 6d.; Golden Gate, (Cal.), 1s. 6d.; Gold Fields of Mysore, 1s. 6d.; Gravel Gold, 6d.; Kaboonga, 6d.; Loma, 6d.; Mount Morgan, 6d. (allowing for dividend); Mysore Reefs, 1s. 6d.; New Queen, 6d.; Nundydroog, 1s. 3d.; Ooregum, 2s. 6d.; ditto Pref., 2s. 6d.; Orita, 6d.; Pahang Corporation, 1s.; Poorman, 6d.; Rio Tinto, 1s. 3d.; South-East Mysore, 6d.; Wentworth Priority, 2s. 6d.; ditto Ordinary, 2s.—Fallen: Achilles, 1s. 3d.; Brilliant St. George, 1s.; Cape Copper, 1s. 3d.; Mysore, 2s. 6d.; Quebrada, 2s. 6d.; Richmond, 1s. 3d.; Ripanji, 1s.; Tolima, A, 10s.; ditto B, 10s.; West Argentine, 6d.

THE STOCK MARKETS.

A dull market to-day.

The week opened with an active tone all round, but towards the close business began to fall off, and to-day it exhibits a drooping tendency. Consols for the account have fallen 1/16, but colonial loans are firm and rupee paper has recovered a good fraction on repurchases. The market, however, is a narrow one, and the quotations are wide. Home railways are irregular, and while Brighton A, South Eastern Ordinary and Deferred, and one or two others have improved, Great Westerns and the heavies generally have given way. In the foreign department Argentines are firm, and most international stocks have been steady. Italians continue to advance, but Greeks have fallen another fraction. American railroads are flat again, and Milwaukees have lost nearly a point. Grand Trunks are still drooping. The upward movement in mining shares has been checked for the present, and the quotations are in most cases a fraction lower. Allsopp's and Eastmans have also been weak.

THE MONEY MARKET.

A strong Bank return.—No reduction in the rate of discount.

Notwithstanding the phenominally strong Bank return the directors, contrary to public expectation, decided to make no reduction in the official rate of discount, which accordingly remains at 2½ per cent. Including £311,000 gold received from abroad, the stock of bullion rose £525,224, and as the note circulation ran down £310,090, the reserve improved £835,314 to £21,268,943. The tax payments enabled the Government to repay last Saturday Treasury bills for £750,000, and yet add another £806,683 to their deposits, while market resources increased £501,016, notwithstanding the tax collections. An increase of £258,125 in the Government securities was probably caused by a purchase of consols and the market have on balance borrowed from the Bank nearly £200,000, there being an increase in the other securities of about that sum. We append our usual table:—

ISSUE DEPARTMENT.

Notes Issued	£43,117,130	Government Debt	£11,015,100
		Other Securities	5,454,900
		Gold Coin and Bullion	26,667,130
		Silver Bullion	—
	£43,117,130		£43,117,130

BANKING DEPARTMENT.

Proprietors' Capital	£14,553,000	Government Securities	£9,288,583
Rest	3,515,802	Other Securities	23,611,088
Public Deposits	8,086,453	Notes	18,963,380
Other Deposits	27,839,488	Gold and Silver Coin	2,305,583
Seven Day and other Bills	174,811		
	£54,169,554		£54,169,554

The return shows the following changes when compared with the previous statement:—Circulation Issue (increase), £456,620; Circulation Active (decrease), £310,090; public deposits (increase), £806,680; other deposits (increase), £501,016; Government securities (increase), £258,125; other securities (increase), £193,174; coin and bullion (increase), £525,224; seven days' and other bills (decrease), £24,165; rest (increase), £3088; notes in reserve (increase), £766,710; total reserve (increase), £835,314.

To-day there has been a good demand for money, and rates for both short loans and discounts have been a little firmer.

THE GOLDFIELDS OF WESTERN AUSTRALIA.—A correspondent in Western Australia reports that the railway to the Coolgardie Goldfields will be completed in about three months. The work of construction is very simple, owing to the level nature of the country. The rush to the fields continues, and most extraordinary finds of gold are taking place, one of the claims, it is alleged, producing 240 ounces of gold from 112 lbs. of stone. To indicate the excitement which prevails, it may be mentioned that Bayley's £1 shares (7s. 6d. paid) sell at £21.

PUBLICATIONS RECEIVED.

Laxton's Builder's Price Book for 1894.

Sell's Directory of Registered Telegraphic Addresses.

The Engineering Magazine (February, 1894). European edition published by "The Electrician" Printing and Publishing Company (Limited), Salisbury Court, E.C.

The Journal of the Franklin Institute.

The Board of Trade Journal. (February, 1894.)

"Do You Know It? If Not, You Should!" London: Saxon and Co., Bouverie-street, E.C.

Guide to Operations in Stocks and Shares. Thirteenth annual edition. London: George Evans and Co., Queen Victoria-street.

The Railway and Commercial Gazetteer. Twelfth edition, price 8s. 6d.

MINING NOTES.

HOME, COLONIAL, AND FOREIGN.

TELEGRAPHIC advices received from Johannesburg by the Union Steamship Company (Limited) state that the gold crushings on the Witwatersrandt fields for the month of January realised 149,814 ounces. The following table, taken from the circular issued by the mining department of the South African Trust and Finance Company (Limited), gives the crushings to date.

	1888	1889	1890	1891	1892	1893
	Ozs. dwt.	Ozs. dwt.	Ozs. dwt.	Ozs. dwt.	Ozs. dwt.	Ozs. dwt.
January..	7,328 5	25,505 1	5,0[illegible] 15	53,205 8	84,560 8	108,374 0
February.	11,179 14	22,456 3	16,887 5	56,649 8	193,252 0	
March.....	11,975 15	27,919 0	37,780 2	52,919 1	93,[illegible]44 11	11,474 0
April	14,146 8	27,028 1	38,6[illegible]6 19	55,[illegible]7 15	95,562 6	127,083 0
May.....	13,39[illegible] 18	35,[illegible]28 7	36,836 5½	54,673 1	99,436 6	116,911 0
June	12,773 8	30,877 13	37,419 10	56,88[illegible] 1	103,252 3	122,507 0
July.....	16,[illegible]86 17	31,091 2	39 456 14	54,924 1[illegible]	110,[illegible]79 1	126,169 0
August ...	1[illegible],615 19	30,519 14	42,283 11	59,07[illegible] 4	102 322 3	136,069 0
September	2[illegible],242 4	34,143 10	45,485 19	65,601 15½	107.85 13	129,585 0
October ...	27,165 6	32,214 6	45,248 17	77 793 8	112,167 8	138 599 0
November	26,826 17	33,721 16	46,782 18	73,393 15	108,794 15	138,640 0
December	26,784 6	39,050 11	50,352 5	80,312 11	117,748 17	146,357 0
	208,121 14	369,557 5	494,817 0½	729,237 12½	1,210,888 16	1,478,473 0

The amount of gold produced in the year 1887 was 23,155 ounces 8 dwts. Complete monthly totals were not recorded in that year. The output for January is the largest yet recorded, exceeding the December output, the previous record, by 3457 ounces. The total output to date is 5,763,008 ounces.

THAT the Broken Hill silver field has, during the eight years that its mineral treasures have been exploited, achieved a considerable degree of fame on account of the variety of interesting mineral comb nations which it has produced, is the opinion of the *Broken Hill Silver Age*. In two instances at least—in the case of minerals now known as marshite and willyamite—combinations of mineral elements have been brought to light which were previously unknown to mineralogists, while others scarcely less interesting on account of their variety have been observed for the first time in Australia. To the latter class, as far as can be ascertained at present, belongs the mineral nantokite—a chloride of copper—a few specimens of which have lately been discovered in the Broken Hill South Mine. The mineral was first observed at the 300 feet level in the carbonate of lead stop s north of the hauling shaft, and below the original water level of the mine. It consisted of lemon-coloured crystals, and was embedded in a carbonate of lead boulder between 3 feet and 4 feet in diameter, in which it was associated with native and oxide of copper and films of oxy-chloride of copper.

ANALYSES of the mineral were made by Mr. J. Armstrong, of the South mine, and Mr. A. D. Carmichael, of Block 10, when it was found to consist wholly of copper and chlorine in the following proportions:—Copper, 64·28 per cent.; chlorine, 35·92, agreeing very closely with the calculated percentage composition of cuprous chloride ($Cu_2 Cl_2$) which gives copper 64·18 per cent. and chlorine 35·82 per cent., taking the atomic weights as copper 63·17 and chlorine 35·37. The specific gravity of the mineral is approximately 4·3. It is insoluble in water, but soluble in ammonia, solution of common salt, and hydrochloric acid. On heating with water in the presence of air it is decomposed, lemon-yellow coloured hydrated sub-oxide of copper being precipitated, which on further heating is changed into anhydrous sub-oxide, part of the copper going into solution as cupric chloride. Mr. J. R. McKay, manager of the South mine, forwarded an example of the mineral to Professor Liversidge, of the Sydney University, accompanied with the results of the analyses made by Messrs. Armstrong and Carmichael. In a letter received in reply thanking Mr. McKay for the specimens, Professor Liversidge states that their properties agree very closely with those given by Dana, except in regard to colour, the difference in this case being probably due to a slight oxidation. The mineral nantokite, of which the present is the first recorded find in Australia, is referred to by Dana as occurring in the Carmen Bajo mine, near Nantoko, Chili—whence the name. He describes it as containing a percentage of 64·1 copper and 35·9 chlorine, and gives the specific gravity as 3·93 and hardness 2 to 2·5.

THE Mount Bold mine in South Australia, says a correspondent to the *Australian Mining Standard*, is being steadily developed and is turning out some good ore, said to assay 20 per cent. copper, 20 to 25 per cent. lead and about 45 ounces of silver to the ton. There are three shafts: Boncant's, 140 feet in depth, where the lode is 20 inches to 2 feet in width; Davies' shaft is a new one, and is down 40 feet being connected with Boncant's; Alfred's shaft is about 300 feet from Davies' and is sunk to a depth of 70 feet. The lode at the bottom is 4 feet, 6 inches wide between well defined walls running east and west. A portable 14 horse power engine (Marshall's) is employed for hauling from the shaft. The company have a large extent of ground and it is being well developed under the skilful management of Captain C. H. Truscott.

THE African Gold Recovery Company (Limited) announce that 43,500 ounces of gold have been recovered at the Randt, and 7500 ounces in other districts (total 51,000 ounces during January) by means of their MacArthur-Forrest cyanide process, being 29 per cent. of the Randt output for January. The December total was 45,200 ounces.

MR. ALBERT PORTER, a Broken Hill prospector, who has returned from Coolgardie, speaks most highly of the field, and predicts a great future for reefing there. He has secured a valuable area half a mile from the Premier reef.

DAVEY GILMORE, a widely known prospector, has struck a very rich gold lead at the head of Skelly gulch, near Marysville. It is about 1 foot wide and the decomposed particles pan $1 to the pan.

LATER news from the Murchison field states that h crush ng at the Nannine mine has been eminently satisfac ry, 500 ounces being obtained from 39 tons of ore. Splendid fresh water has been struck on the Lady Mary mine at a depth of 213 feet. It is the best water at Cue. The public crusher is now in course of erection at Cue.

JAMES HENLEY, superintendent of the Granite Mountain Mine, is spending a few days at the Golden Sunlight Mines, near Whitehall, owned by the American Developing and Mining Company, of which he is one of the directors. This company is now making regular weekly shipments of copper ore.

THE Aurora Gold Mining Company has arranged to sell 100,000 tons of tailings, some already accumulated and some to be produced, to the African Gold Recovery Company. The latter company will erect a plant to work these tailings, which are of low grade.

THE Robinson Company is adding 10 stamps to its mill for the purpose of making trial crushings of ore from the main reef, and it is possible that the payability of this large body of banket may be proved, in which case the value of the property will be considerably increased.

THE directors of the Geldenhuis Deep Company intend almost immediately to order 100 stamps. They are anxious to retain the reserve shares now in existence, and accordingly they will shortly ask permission to issue 160,000 in debentures from time to time as funds may be required.

DEVELOPMENT in the City and Suburban mine is being energetically carried on in the 3rd, 4th, and 5th levels, the latest measurements showing that by the time the full complement of stamps is at work ample reserves of ore will be available. The main incline shaft is now down 700 feet on the incline at an angle of 30 degrees, or 350 feet vertical, whilst the western shaft has been carried down 490 feet. With the new compressor plant at work rapid progress will naturally be made, and it is eventually intended to employ the drills in the stopes as well as in the drives. Two separate reefs are being opened up on each level; but the main reef, except possibly at the western end of the property, has hitherto shown itself unpromising.

A MINER and prospector, lately from Colorado, warmly criticises the system in vogue in Arizona of working mining locations. He says the prospector finds a fair showing of ore, but all around he finds monuments, without the slightest indication of work done on the property other than the piling up of the stone corners. It may be that the property has been abandoned for years, the owner may be dead, but in order to find it out the prospector has to take a trip to the country seat and hire some one to look over the books for him. Some of the Arizona prospectors are holding on to 30 or 40 "mines," upon each of which they, unaided, pretend to do $100 worth of work per year.

THE search for the lost Pegleg mine has not been abandoned notwithstanding the lives that have been lost and the suffering endured in search for the location of this mysterious property. Another expedition is said to be quietly fitting out in Los Angeles, which, it is claimed, is in possession of newly-discovered evidence as to the mine's whereabouts. Men of means are reputedly backing the venture, and the expedition is to have every auxiliary to a successful search that money can command,

ELECTRICITY FROM RUBBISH.—At the invitation of the Atlas Contracting Syndicate (Limited) a large party of experts and pressmen paid a visit to Halifax, on Saturday, to witness an installation of the inventions of M. Fountain de Livet, for the economical and rapid generation of steam in boilers, and the utilisation of dust and town refuse for electric lighting and other purposes. The party was received at the works by Mr. Edwin E. Glaskin, M.A.S.C.E., the consulting engineer to the company. The Livet steam generator consists of a group of boilers and cylinders surrounded by an ingenious arrangement of flues designed so as to produce a very strong natural draught. Two men were engaged shovelling refuse into the furnace. "The peculiarity of this furnace," said Mr. Glaskin, "is such adaptation of the form of the flues as will utilise the increasing density or weight of the gases (or products of combustion) as they travel toward the chimney, so promoting a high velocity to the air passing through the furnace bars, and producing thereby rapid combustion, with intense heat at the same time, to cause those gases themselves to move so slowly through the flues that they part with all their useful heat before escaping into the atmosphere. In doing this the laws are followed which were enunciated by Regnault, Davy, Joule, Lavoisier, Laplace, Duprè, and other investigators, as governing the conduct of vapours at various temperatures. And it is by this intense force of draught at the furnace that such a high and constant temperature is obtained in the furnace as to secure complete combustion, so depriving the consumed substances of all unpleasant odours. The temperature of the gases just before entering the chimney is from 300 to 400 degrees Fahr. lower than now obtained, thereby securing not only an increased economy, equal to the difference of heat thus absorbed by the boiler, but releasing the chimney from the crushing strain at present induced by the high range of difference in temperature between the interior and exterior, progressing until the limit of tensile strength (which is 1-12th of compression) is reached, and the chimney bursts or cracks. The progression of the gases is partially arrested at each end of each flue, for the purpose of permitting them to deposit the contained light dust in suitable expansion chambers or pits, which can be cleaned out at all times. So effective is this arrangement in overcoming the objectionable dust (which in the ordinary destructor quickly fills up the flues, and impregnates the atmosphere of the surrounding district) that after months working the flues have been found perfectly clean, all the dust having been deposited in the expansion chambers." The power generated was used for arc and incandescent lights at the works, and a 25,000 candle power search light on the top of an adjoining building. It is claimed that the installation is capable of producing 250,000 candle power, burning only town refuse. Mr. Glaskin stated that the town refuse of London would produce by this process over 87,818 indicated horse power at a total cost of £141,499, whereas the cost with the best Lancashire boiler, burning coal and evaporating 10 lbs. of water per lb. of coal, would be £799,143.

FORTHCOMING MEETINGS.

*** We shall be obliged if Secretaries or other Officials of Mining, Railway and other Companies will be good enough to advise us as early as possible of the date, time and place of their forthcoming meetings whether statutory, semi-annual, annual, general or extraordinary, confirmatory or adjourned—in order that particulars may be announced for the benefit of our subscribers and more particularly our country readers. Balance sheets, reports and other matter to be submitted at such meetings should, where possible, accompany the intimations of the meetings sent*

Name of Company.	Date.	Nature of Meeting.	Place.	Time.
Wyledesdale Gold Exploration and Development Co.	Feb. 19	General	Winchester Ho	2 p.m.
Stewacke Valley and Lansdowne Railway	Feb. 20	General	Winchester Ho	2.30 p.m.
Alabama, New Orleans and Texas Railway	Feb. 20	General	Cannon-street	2 30 p.m.
British Land Company.....	Feb. 23	General	Cannon-street	12 a.m.

THE METAL MARKETS.

LONDON METAL MARKET.

THE METAL MARKET—LONDON, FEBRUARY 16

Copper.

THE statistics just published leave the position practically unchanged. The slightly firmer tendency in which copper opened disappeared on the renewed decline in silver, and, in the absence of all disposition to make speculative purchases, we have had a flat market throughout. On Monday business in G.M.B.'s was done at £41 2s. 6d. s.c. and £41 12s. 6d three months. Tuesday's business was at rather lower values, three months changing hands as low as £41 10s. On Wednesday there was a recovery to £41 15s. three months, and £41 3s. 9d. s.c. Yesterday after £41 16s. 3d. had been done, £41 15s. and then £41 13s 9d. was accepted, and to-day we have had transactions at up to £41 18s. 9d. three months. The market closing firm at £41 8s. 9d. to £41 10s. s.c. and £41 17s. 6d. to £42 three months. Refined copper has declined in sympathy with G.M.B.'s. In furnace material we hear of 215 tons of Mexican ore done at 7s. 6d. per unit and 400 tons Chili ore at 7s. 1½d

Tin

has, of course, been greatly influenced by the collapse in silver. The first transaction in Straits was at £70 10s. three months, this being followed by a sale of spot at £69 12s. 6d.; before the day closed, however, there was a rally to £69 18s. 9d. s.c. On Tuesday £69 12s. 6d. s.c. and £70 10s. to £70 11s. 3d. were recorded, but Wednesday's market was very flat, the spot value falling to £69, whilst Thursday saw a further drop to £68 7s. 6d. s.c. To-day £69 11s. 3d. three months, and £68 10s. s.c. were done, the market closing steady at £68 12s. 6d. s.c. and £69 10s. three months, rather buyers. Billiton spot, after advancing from 41⅛ fl. to 41¼ fl., steadily declined, and closes at 41¼ fl.

Pig Iron.

In the Glasgow market values have ruled fairly steady, the extreme range having been from 43s. 5½d. to 43s. 8½d. s.c. Scotch. The closing price is 43s. 6d., whilst hematite is quoted 45s. 2½d., and Cleveland 36s. 0½d. Shipments from Scotland last week were advised as 3123 tons, or 1183 tons under those of the parallel week of 1893.

Lead

has improved slightly, and closes with soft foreign at £9 5s. to £9 7s. 6d. and English at £9 7s. 6d. to £9 10s.

Spelter

is likewise rather firmer, the closing value being £16 to £16 2s. 6d. ordinaries, and £16 2s. 6d. to £16 5s. specials.

Antimony

is quite flat, and in poor demand. The present price is £36 10s.

Quicksilver

is quiet at £5 17s. 6d. firsts and £5 16s. seconds.

The following are to-night's (February 16) prices of metals:—

	£ s. d.	£ s. d.
Copper.		
Tough cake and ingot	43 0 0	43 10 0
Best selected	44 0 0	44 10 0
Sheets and sheathing	——	52 0 0
Flat bottoms	——	55 0 0
Chili bars ... } spot, & 3 months respectively	41 10 0	42 0 0
Good merchantable, } spot, & 3 months respectively		
Copper tubes	——	0 0 7¾
Alloys.		
BRASS: Wire	——	0 0 5½
,, Tubes (solid drawn)	——	0 0 5¾
,, Sheets	——	0 0 6¾
PHOSPHOR BRONZE: Alloys II. ...	——	88 0 0
,, ,, III. or V. } Cog Wheel Brand	——	93 0 0
,, ,, VII. ... }	——	95 0 0
,, ,, XI. ...	——	90 0 0
,, ,, Vulcan brand A1 B.C. ... 80 0 0		85 0 0
DURO METAL 80 0 0		82 0 0
HULL'S METAL	——	70 0 0
FERROBRONZE: Ingots ... ...per lb.	0 0 6	——
,, Ordinary sheets, plates, bolts and bars	0 0 7	——
,, Screw bolts and nuts	0 0 8½	——
,, Pump rods, plain	0 0 7½	——
,, ,, finished	0 0 10½	——
DELTA METAL: No. 4 (per ton)	——	73 10 0
,, Sheets and plates (per lb.) ...	0 0 10½	——
,, Bars, round, square, flat (per lb.) ...	0 0 9½	——
,, ,, hexagon (per lb.)	0 0 9	——
Tin.		
English, ingots, f.o.b.	——	74 0 0
,, bars	——	75 0 0
,, refined	——	75 0 0
Straits, spot and 3 months respectively ...	68 12 6	69 10 0
Australian spot, and three months respectively ...	68 17 6	69 15 0
Banca ,, (in Holland)	73 0 0	73 5 0
TIN PLATES: Charcoal, best quality ... per box	0 16 0	0 18 0
,, ,, ordinary	0 14 0	0 15 0
,, Coke, best quality	0 11 6	0 12 0
,, ,, ordinary	——	0 10 3

These prices of tinplates are f.o.b. at Swansea: at Liverpool 6d. per box more.

Iron.		
Pig, G.M.B., f.o.b., Clyde, spot	——	2 3 5¾
,, Scotch pig, No. 1 Gartsherrie	——	2 11 6
,, ,, Coltness	——	2 16 6
,, ,, Clyde	——	2 9 6
,, ,, Govan	——	2 5 0
Bars, Welsh, f.o.b. Wales	——	5 5 0
Plates ,, ,, ...	——	6 5 0
Bars, Staffordshire, at works	——	5 12 6
Sheets ,, ,, ...	——	6 15 0
Plates ,, ,, ...	——	6 12 6
Hoops ,, ,, ...	——	5 17 6
Ship plates, Middlesborough	——	4 17 6
STEEL: English spring... nominal } according to quality ...	9 0 0	20 0 0
,, ,, cast ... }	16 0 0	55 0 6
,, Rails at works, 50 lbs. per yard and upwards ...	3 15 0	3 18 9
,, ,, light, at works, according to section (extra)	0 10 0	2 0 0
Lead.		
Spanish or soft foreign	9 5 0	9 7 6
English pig, common	9 7 6	9 10 0
,, L.B.	——	9 17 6
,, sheet and bar	——	10 12 6
,, pipe	——	11 2 6
,, red	——	12 5 0
,, white	——	16 10 0
,, patent shot	——	14 10 0
Spelter.		
Silesian ordinary brands	16 0 0	16 2 6
,, special brands	16 2 6	16 5 0
English Swansea	16 12 6	16 15 0
Sheet Zinc	18 10 0	19 0 0
Antimony.		
Antimony	——	35 10 0
Quicksilver.		
Flasks, 75 lbs. warranted	5 16 0	5 17 6
Ore, c.i.f., U.K. ports		per unit.
Manganese.		
1st quality, 50 per cent. and upwards	——	0 1 0
2nd ,, 47 per cent. to 50 per cent.	0 0 10	0 0 11
3rd ,, 40 ,, 47 per cent.	0 0 9	0 0 10
Aluminium.		Per lb.
98–99½ per cent. (guaranteed 98 per cent. min.) in ingots (1 cwt. lots)		0 2 0
do do (5 cwts. and up) ...		0 1 11

NORTH LONDON RAILWAY.—Mr. O. L. Stephen presided at the ordinary meeting of this company, held this week at Euston Station, and moved the adoption of the report. He said that, considering the depression in trade, not only in England but all over the world, during the last six months, it was not surprising the company's traffic had fallen off like that of other railways. The coal strike had disorganised and paralysed the whole trade of the country. Their coal traffic from the midland counties entirely ceased for a time, and but for the fact that they received a very large tonnage of seaborne coal from districts which were not affected by the strike, the mineral traffic receipts would have shown a much larger decrease. The passenger traffic had not been satisfactory, because they had received £1000 less in money, and had carried 201,691 more passengers. Season tickets, however, had increased by 623 during the half year; and they had carried 532,194 more workmen. During the past 12 months they had conveyed 5,986,026 workmen, as compared with 4,950,942 in the preceding year. Considering all things, it was satisfactory that the directors were able to propose a dividend at the rate of 7 per cent. for the six months. The report was adopted.

"THE MINING JOURNAL" SHARE LIST.

ABBREVIATIONS AND REFERENCES.—The following are the significations of the abbreviations and references which occur in the Share List:—*Ay*, Antimony; *A*, Arsenic; *Bl*, Blende; *Bx*, Borax; *C*, Copper; *D*, Diamond; *G*, Gold; *I*, Iron *L*, Lead; *M*, Mundic; *N*, Nitrates; *P*, Phosphates; *Q*, Quicksilver *R*, Ruby; *S*, Silver; *S-l*, Silver-lead; *Sul*, Sulphur; *T*, Tin; and *Z*, Zinc. * in the "called up" column of British Mines, signifies that the mine is conducted on "Cost Book" principles: ‡ in the "Head Office" column of African Mines, signifies that the address given is not that of the head office, but of a sub- or transfer office and †, following the names of African mines, signifies that they are subject to the Limited Liability Law of the South African Republic. ●

*** *The following is by far the most complete and comprehensive list of mines, in whose shares business is being currently transacted, published. Additions will be made from time to time as occasion requires. Every effort is made to ensure accuracy, and Secretaries of Companies, Share dealers, and our readers generally, are cordially invited to co-operate with us to this end, by notifying us of any errors that may at any time occur. We desire it to be understood that, while our Share List will almost invariably be found correct; we do not hold ourselves responsible for any loss or inconvenience that may arise from possible inaccuracies.* ▲

BRITISH MINES.

Name	Closing Price, Feb.16,1894.	Closing Price, Feb. 9, 1894.	Par.	Latest Dividend.	Called up Per Share.	Shares Issued.	Situation of Mine.	Head Office.
			£ s.		£ s. d.			
Atlas .....T	—	—	1 0	—	0 12 6	12,000	Devon	Camborne.
Blue Hills ....CT	3/- 4/-	4/-	*	2/- May '81	6 11 6	6,000	Cornwall	Camborne.
Botallack .....T	—	—	*	—	51 4 6	2,220	Cornwall	St. Just.
Carn Brea .....T	13¼ 13⅜	14¼	*	2/6 Dec.,'93	21 5 0	6,000	Cornwall	Carn Brea.
Cook's Kitchen ..T	3/6 4/6	4/6	*	—	28 15 4	4,900	Cornwall	Camborne.
Cumberland L	—	—	1 0	5% May, '88	1 0 0	55,000	Cumberland...	7, Angel-court E.C.
Cwmystwyth	—	—	1 0	—	1 0 0	5,000	Cardigan	
Derwentwatr.CLZ	—	—	1 0	—	1 0 0	10,[illegible]	Cumberland..	Manchester.
Devon Gt.Cons.CA	1⅛ 1¾	1⅜	5 0	3/- Nov. '93	2 0 0	10,[illegible]	Devon	8, Finsbury-circus.
Dolcoath .....T	69½ 70⅛	70⅛	*	5/- Jan. '94	9 12 6	[illegible]	Cornwall	Camborne
Drakewalls .CTM	—	—	1 0	—	1 0 0	100,000	Cornwall	‡Dashwood House.
East Blue Hills T	—	—	*	—	1 18 3	4,283	Cornwall	73¼, Gracechurch-st.
EastGrassington L	—	—	1 0	—	1 0 0	20,000	Yorkshire	Palmeraton-building
East Pool .....AT	11 11½	11½	*	5/- Oct. '93	0 9 9	6,400	Cornwall	Illogan.
Gawton .....CA	—	—	50/-	—	2 7 0	12,000	Devon	26, Great St. Helens.
Great Vexey.....L	2½ 3½	3½	4 0	5/- Apr., '92	4 0 0	15,000	Isle of Man ...	Douglas, Isle of Man.
Green Hurth ...L	—	—	1 0	-/6 June '89	0 19 0	32,000	Cumberland...	Newcastle.
Halkyn L	—	—	1 0	2/- Sep. '93	1 0 0	10,000	Flintshire.....	Chester.
Hexworthy .....T	—	—	1 0	—	1 0 0	18,335	Devon	6, Queen-street-place
Isle of Man L	—	—	5 0	5/6 Sep. '93	5 0 0	14,000	Isle of Man ...	Chester.
Killifreth .....T	3⅝ 4	4	*	3/6 Dec. '93	5 6 3	6,000	Cornwall	Truro.
Kingsdale.....LB	—	—	1 0	3/- May, 1892	1 0 0	15,919	Cardiganshire	6 Queen-street-place
Lead Hills L	1⅜ 1¾	22/6	6 0	3/- Sep. '92	6 0 0	20,000	Lanarkshire...	30, Finsbury-circus.
Levant .....CT	—	—	*	10/- Aug., '93	11 9 6	2,500	Cornwall	Penzance.
Lovell .....T	—	—	*	1/3 Nov., '91	1 16 7	7,165	Wendron	3, Gt. Queen-st., S.W.
Minera (New) ..L	—	—	5 0	3/- Mar '90	5 0 0	9,000	Denbighshire.	Minera, N. Wales.
Nenthead Tadie.LZ	—	—	1 0	6% Feb., '91	0 18 6	48,875	Northumberld.	Newcastle-on-Tyne
New Balleswidd'n T	—	—	1 0	—	1 0 0	50,000	Cornwall	St. Clement's Ho., E.C
New Cooks Kitc.TC	—	—	*	—	10 18 3	4,900	Cornwall	Camborne.
Pedn-an-dres .....T	—	—	*	—	4 3 6	7,000	Cornwall	Redruth.
Phœnix United TC	6/- 7/-	7/-	*	1/- Mar. '90	6 9 9	12,000	Cornwall	Liskeard.
Polberro & Trev. T	—	—	*	—	1 11 6	18,000	Cornwall	37, Walbrook.
Prince of Wales TC	2/- 3/-	3/-	10/-	—	—	—	Cornwall	6, Draper's-gardens.
Roman Gravels .L	—	—	10/-	—	—	—	Salop	11, Queen Vic.-st., EC
Rushen L	—	—	1 0	5% Sept. '91	1 0 0	26,131	Isle of Man ...	Douglas.
So. Condurrow TC	5/- 10/-	10/-	*	3/6 Apr. '93	7 12 1	8,123	Cornwall	20, Great St. Helens
South Crofty TA	1⅜ 2⅛	2⅛	*	—	16 16 6	6,120	Cornwall	Pool, Cornwall.
South Darren L	—	—	*	—	—	—	Cardiganshire	6A, Austin Friars.
South Frances....T	—	—	*	—	18 1 0	4,500	Cornwall	Redruth.
Tincroft .....T	11¾ 11¾	12	*	3/- Dec. '93	15 7 6	6,000	Cornwall	Carn Brea.
Weardale L	—	—	4 0	1/3 Oct. '90	1 5 0	50,000	Durham.....	3, Lombard-court.
West Frances ....T	1¼ 1⅜	25/-	—	2/6 May, '89	15 15 1	6,144	Cornwall	Camborne.
West Kitty .....T	7⅛ 8	8	*	4/- Jan. '94	0 12 0	6,000	Cornwall	37, Walbrook.
Wheal Agar ...TA	2¾ 2¾	3	*	2/6 Aug. '88	22 0 8	6,000	Cornwall	Redruth.
Wheal Basset ...TC	3⅛ 4	4	*	10/- Apr. '88	12 0 10	6,144	Cornwall	Redruth.
Wheal Friendly..T	2/- 4/-	4/-	*	—	0 11 3	10,000	Cornwall	37, Walbrook, E.C.
Wheal Grenville T	15/- 16/-	15¼	*	5/- Oct. '93	17 10 0	6,000	Cornwall	7, Union-court, E.C.
Wheal Kitty.....T	10/- 15/-	15/-	*	3/- Mar. '88	7 9 6	4,295	Cornwall	Truro.
Wheal Metal ...T	—	—	*	—	0 13 9	10,784	Cornwall	73¼, Gracechurch-st

AUSTRALIAN AND NEW ZEALAND MINES.

Achilles Gft Fld.	17/16 19/16	—	1 0	—	1 0 0	80,307	New Zealand	3, Church Pas., E.C.
Aladdins Lamp G	113/16 113/16	1¾	1 0	1/- Feb.'94	1 0 0	100,000	N S Wales ...	4-6, Throg. Avenue.
Anglo-Saxon ...G	—	—	1 0	2/- July, '89	1 0 0	51,000	Queensland ..	4, Lombard-court.
Australasian .... G	1/5 2/-	2/3	1 0	-/5 Mar., '92	1 0 0	210,000	Queensland ...	6, Queen-st. place
Australian C	—	—	20 0	1/6 Aug. '93	7 7 6	18,315	So. Australia	18, Old Jewry Chbrs
Aus. Pro. Hill Con.	1/8 2/-	1/9	1 0	1/- June, '91	1 0 0	540,000	N. S. Wales ...	Winchester House.
Blue Spur & G. G.	—	—	1 0	—	1 0 0	75,926	New Zealand	6, Gt. St. Helens'
Bonnie Dundee G	2/8 3/-	3/-	1 0	—	0 17 6	120,000	Queensland ..	3-5 Gracechurch-st
Brilliant Block...G	⅞ 1	15/16xd	2 0	—	2 0 0	250,000	Queensland ...	7, Gracechurch-st.
Brit. Brok. Hill S	3/6 4/6	4/-	5 0	—	5 0 0	240,000	N. S. Wales ...	Abchurch Chambers.
Broker Hill Prop.	2¾ 2¾ xd	2¾	8 0	1/6 Dec, '93	0 8 0	960,000	N. S. Wales ...	Abchurch Chambers
Carrington.....G	2/9 3/3	2/-	12/6	—	0 12 6	100,000	Queensland ...	9, Tokenhouse Yard
Coromandel .....G	—	—	1 0	—	0 5 0	95,000	India	E.7, Queen-street-pl.
Craven's Cal.	3/6 4/6	4/6	6 0	-/3 Nov. '93	0 4 8	100,000	Queensland ...	30-1, 8 Swithin's-la.
Croydon King Blk	—	—	5/-	—	0 5 0	60,000	N. Queensland	Leadenhall Bldg. E.C.
Cumbrind (New)G	1/- 2/-	2/-	1 0	2/6 Dec. '87	0 19 0	200,000	Queensland ...	Blomfield House.
DayDawn B.&W.G	4/6 5/-	5/-	1 0	-/6 Mar. '93	1 0 0	494,400	Queensland ...	3-5, Gracechurch-st.
Day Dawn P. C. G	5/- 5/6	5/9	1 0	-/6 Apr. '92	1 0 0	490,000	Queensland ...	Winchester Ho., E.C.
Eaglehawk.....G	1/- 1/6	1/6	1 0	—	0 18 3	120,000	Victoria.....	31, Lombard-street.
Etheridge .....G	—	—	5 0	—	0 5 0	324,790	Queensland ..	6-7 Queen-street-pl.
Golden Gate.....G	—	—	10/-	—	0 10 0	150,000	Queensland..	9, Tokenhouse Yard
Glenrock .....G	2/3 2/9	2/6	1 0	—	0 19 6	225,000	N. Zealand ..	3-5, Queen-st, E.C.
Harristville .....G	—	—	1 0	-/6 July, '90	1 0 0	146,330	Victoria.....	6-7, Queen-street-pl
Kaboonga .....G	-/9 1/-	1/-	10/-	—	0 10 0	500,000	Queensland ...	30, St. Swithin's-la.
Kangarilla .....A	-/9 1/3	1/3	1 0	—	0 18 6	88,275	So. Australia	68, Coleman-street.
Kapanga.....G	-/6 1/-	-/9	1 0	-/6 Jan. '91	0 18 9	250,000	N Zealand ...	9, New Broad-street
Kilkivan .....G	—	—	1 0	—	1 0 0	120,000	Queensland ...	4, Coleman-street.
Midas G. F. ...G	—	—	1 0	—	1 0 0	180,000	Victoria	32 Poultry, E.C.
Mills' Day Dawn G	1⅝ 1⅝	1⅝	1 0	-/3 Sep, '53	0 15 9	300,000	Queensland ...	3, Gracechurch-st.
Moruya .....GS	—	—	1 0	—	1 0 0	58,235	N. S. Wales ...	16, St. Helen's-place.
Mosman .....G	4/6 5/-	5/-	1 0	-/3 Jan. '94	1 0 0	185,000	Queensland ...	3-5, Gracechurch-st.
Mt. Leyshon .... G	1/- 1/6	1/6	1 0	-/6 Dec. '90	1 0 0	157,989	Queensland ...	7, Draper's-gardens.
Mountain Maid G	1/6 2/6	2/6	10/-	—	0 6 3	56,000	Queensland ...	Leadenhall Bldgs.
Mt. Morgan Ex. G	1⅞ 2xd	2	5/-	—	0 2 0	180,000	Queensland ...	4, Tokenhouse Bldgs
Mt. Shamrock GB	—	—	1 0	—	1 0 0	275,000	Queensland ...	13, Basinghall-st E.C
Mount Zeehan.....	-/6 1/-	1/-	1 0	—	1 0 0	193,257	Tasmania	Mansion Ho. Cham.
New Queen .... G	8/6 9/-	8/9	1 0	-/6 Oct. '93	0 19 6	158,915	Queensland ...	30, St. Swithin's-la.
Port Phillip .....G	—	—	5 0	—	0 5 0	200,000	Victoria	57, Moorgate-st., E.C.
Queen's Fthdy Un	—	—	1 0	—	0 10 0	—	Victoria	7-8, Gt. Winchester St.
Queens Smelting	⅜ ⅝	⅜	1 0	—	1 0 0	38,244	Queensland ...	9, Tokenhouse Yard.
ScottishAustralian	—	—	1 0	—	1 0 0	200,00	N.S. Wales ...	Winchester Ho. E.C.
Sunburst	—	—	10/-	-/6 Mar. '92	0 10 0	150,000	Queensland ...	9, Tokenhouse Yard.
Tasmanian Crown	—	—	1 0	—	1 0 0	175,000	Tasmania	8, Old Jewry, E.C.
Tipperary	—	—	1 0	—	1 0 0	35,000	N. Zealand ...	3-5, Queen-st., E.C.
True Blue	1/6 2/6	2/6	1 0	—	1 0 0	53,000	Australia	Leadenhall Bldg. E.C.
Victoria.....	—	—	1 0	-/6 Dec. '93	1 0 0	144,000	Char. Towers	32, Gresham-st., E.C.
Victory..... G	10/- 12/6	12/6	5 0	—	0 5 0	200,000	Queensland ...	32, Gresham-st., E.C.
Waihi..... G	20/- 25/-	25/-	1 0	1/- Jan. '94	1 0 0	150,000	New Zealand	11, Abchurch-la E.C
Wentworth Ord.G	5/8 6/-	5/-	1 0	6/- Jan. '93	1 0 0	500,000	N. S. Wales ...	4-6, Throgmort. Ave

INDIAN AND ASIATIC MINES.

Balaghat Mysore G	4/9 5/3	5/9	1 0	—	1 0 0	160,000	India	6-7, Queen-street-pl.
Burma Ruby .....R	1/6 2/-	2/6	1 0	—	0 17 0	300,000	Burmah	Suffolk House, E.C.
Champion Reef...G	3⅝ 3¾	3⅝	1 0	—	1 0 0	200,000	India	6-7, Queen-street-pl.
Colar Central ...G	-/6 -/9	-/9	1 0	—	1 0 0	200,000	India	Dashwood Ho., E.C.
Coromandel..... G	—	—	1 0	—	0 12 6	120,000	India	6-7, Queen-st.-place.
Devala Moyar ...G	—	—	1 0	—	1 0 0	200,000	India	34, Nicholas-lane.
Gemming&Mining	—	—	2 0	—	1 7 6	24,456	Ceylon	183, Gresham House
Gold Fids Mysore G	25/6 26/6	26/6	1 0	1/- July '92	1 0 0	220,000	India	6-7, Queen-street pl.
Gold Fids Siam G	—	—	1 0	—	1 0 0	150,000	Siam	19, St. Swithin's-lane.
Hyderabad Dec. ..	—	—	10 0	—	10 0 0	1,000,000	Deccan	18, St. Helen's-place
Kempinkote GdFd	1/- 1/8	1/8	5 0	—	0 3 0	698,850	India	6-7, Queen-st.-place.
Mysore ..... G	3 3¼	3⅜	1 0	3/6 Oct, '93	1 0 0	225,700	India	6-7 Queen-street pl.
Mysore Reefs ...G	9/8 10/-	9/-	1 0	—	0 19 6	200,000	India	6-7, Queen-street-pl.
Mysore West ...G	4/3 4/9	4/9	1 0	—	0 19 6	130,000	India	Dashwood Ho., E.C.
Mysore Wynaad G	2/- 2/6	2/6	1 0	—	1 0 0	250,000	India	Dashwood Ho., E.C
Nine Reefs .....G	1/9 2/3	1/9	10/-	—	0 10 0	250,000	India	6-7, Queen-street-pl
Nundydroog.....G	1⅛ 1⅝	1 13/16	1 0	1/6 Aug. '93	1 0 0	200,000	India	6-7, Queen-street-pl.
Ooregum (Def.O.)C	4 13/16 4 13/16	4 11/16	1 0	3/6 Dec. '93	1 0 0	145,000	India	6-7, Queen-street-pl.
Do. (10% Pref.).	5⅝ 5¾	5⅝	1 0	3/6 Dec. '93	1 0 0	120,000	India	6-7, Queen-street-pl.
Pahang Corpn. ...	2/- 4/-	4/-	1 0	15% Apr. '29	1 0 0	200,000	Malay Penin.	Blomfield Ho., E.C.
Pahang Kabang...	—	—	1 0	—	1 0 0	394,740	Malay Penin.	4a, Jeffrey's sq., E.C.
South P. Mysore G	5/6 6/-	5/6	4/-	—	0 3 9	133,074	India	6-7, Queen-street-pl.
Springdale.....	3/- 3/6	—	4/-	16⅛% Dec. '93	0 4 0	200,000	India	20, Abchurch-la. E.C

EUROPEAN MINES.

Alamillos L	10/- 15/-	15/-	2 0	1/6 Mar. '92	2 0 0	35,000	Spain	6, Queen-street-place
Argentella C	—	—	1 0	—	1 0 0	133,165	Corsica	16, Philpot-lane.
Bratsberg C	¾	¾	1 0	—	0 18 0	120,000	Norway	1, Gresham-buildings
English Cr. Spelter	¾ ⅞	⅞	1 0	5% Dec. '92	1 0 0	84,000	Lombardy	9, Queen-street-place
Fortuna L	⅞ ⅞	⅞	2 0	1/3 Mar. '92	2 0 0	25,000	Spain	6, Queen-street-place
Libiola.....C	3⅜ 3⅝	3⅝	5 0	2/6 Sept. '93	5 0 0	50,400	Italy	Dashwood Ho., E.C.
Linares L	3⅝ 3⅝	3⅝	3 0	5/- Sep. '93	3 0 0	15,000	Spain	6, Queen-street-place
Marbella I	64/6 65/6	71/6	10 0	5% Aug. '91	10 0 0	25,000	Spain	78, Queen Victoria-st
Mason & Barry...C	2¾ 2¾	2¾	5 0	2/- May. '93	5 0 0	185,172	Portugal	87, Cannon-street.
Oscar C	—	—	5 0	—	0 4 6	117,240	Norway	6A, Austin Friars.
Pestarena .....G	1/6 2/-	2/-	3 0	—	3 0 0	67,909	Italy	6-7, Queen-street-pl.
Pontgibaud.....L	10 12	12	20 0	12½% Dec. '92	20 0 0	14,000	France	6-7, Queen-street-pl.
Rio Tinto C	14¾ 14⅝	14⅝	10 0	7/- Nov.,'95	10 0 0	335,000	Spain	30, St. Swithin's-lane
Do. (Mort Bonds)	102 105	103	100 0	5% Jan. '91	100 0 0	2,168,980	Spain	30, St. Swithin's-lane
Do. (2nd do.)	101 102	102	100 0	5% Jan. '91	100 0 0	1,117,180	Spain	30, St. Swithin's-lane
Ripanji ....Q	5/- 7/-	7/-	1 0	—	0 19 0	85,000	Servia	Liverpool.
Tharsis.....C Sul	4⅛ 5	5	2 0	15% Apr. '93	2 0 0	625,000	Spain	Glasgow.
West Prussian Pre.	10 10¼	10¼	10 0	5% Jan. '93	10 0 0	5,450	Germany	Walbrook Ho., E.C.
West Prussian Or.	15 16	15	10 0	5% Jan. '93	10 0 0	14,090	Germany	Walbrook Ho., E.C.

NORTH AMERICAN MINES.

Name.	Closing Price, Feb. 16, 1894	Closing Price, Feb. 9, 1894.	Par.	Latest Dividend.	Called up per Share.	Shares Issued.	Situation of Mine.	Head Office.
			£ s.		£ s. d.			
Almada and T .. S	-/3 -/9	-/9	2/6	—	0 2 6	351 008	Mexico	6, Queen-street-place
American Belle...S	1/- 1/5	1/9	1 0	-/6 Mar. '91	1 0 0	400,000	Colorado	25A, Old Broad-street.
Big Creek	—	—	1 0	1/- Dec. '91	1 0 0	80,038	Nevada	2, Pancras-lane, E.C.
California	—	—	10/-	-/6 May '90	0 8 9	129,571	Colorado	St. George's Ho. E.C.
Canadian Phos. P	¾ ⅝	⅝	1 0	-/6 Nov.,'90	1 0 0	73,334	Canada	155, Fenchurch-st.
Chiapas	—	—	1 0	—	1 0 0	221,876	Mexico	33, Broad-st. Av. E.C.
Colorado Silver...S	—	—	1 0	—	1 0 0	112 491	Colorado	Abchurch-chbrs. E.C.
Cortez	—	—	1 0	3 % Feb. '93	1 0 0	300,000	Nevada	Suffolk House, E.C.
De Lamar.....GS	22/ 23/-	22/6	1 0	1/- Jan. '94	0 19 9	440,000	Idaho	6, Draper's-gardens.
Dickens CusterGS	-/2 -/4	-/4	1 0	—	0 19 9	420,000	Idaho	Winchester Ho. E.C.
Elkhorn .....S	10/6 11/6	10/6	1 0	1/- Dec, '93	1 0 0	175,007	Montana	6, Draper's-gardens.
Emma .....S	-/3 -/9	-/9	5 0	—	0 5 0	367,785	Utah	15, Geo-st, Mansn. Ho
Flagstaff .....S	-/3 -/6	-/6	1 0	—	0 13 3	240,000	Utah	Dashwood Ho., E.C.
Garfield ..... GS	—	—	1 0	-/6 Dec. '88	0 19 6	98,185	Nevada	Suffolk House, E.C.
Golden Feather G	6/- 7/-	7/6	1 0	—	1 0 0	180,000	California ...	St. Stephen Ch E.C.
Golden Gate.....	-/6 1/-	1/-	1 0	—	0 18 0	79,600	California ...	St. Stephen Ch E.C.
Golden Leaf..... G	-/9 1/3	1/3	1 0	—	1 0 0	200,259	Montana	3, Draper's Gardens.
Golden Valley...G	3/- 4/-	4/-	1 0	—	1 0 0	68,307	Colorado	15, Angel Court
Harquahala.... G	19/- 20/-	20/6	1 0	—	1 0 0	30,000	Arizona	6, Drap 's Gardens.
Ho comb Valley G	-/6 -/9	-/9	5 0	—	0 5 0	540,000	California ...	14, Cornhill E.C.
Idaho..... ..... GS	-/7½ /10½	-/9	1 0	—	1 0 0	224,967	Idaho	140, Leadenhall-st.
Jackson Goldfields	—	—	5 0	—	0 5 0	408,635	California	6, Drapers' Gardens.
Jay Hawk ... ...G	7/6 8/-	8/-	1 0	-/6 Dec. '92	1 0 0	285,000	Montana	Dashwood House,
Kohinoor "B"GS	—	—	1 0	-/6 June '81	1 0 0	112,971	Colorado	Bloomfield Ho., E.C.
La Plata.....S	-/4 -/7	-/7	5/-	1/3 Oct. '82	0 4 3	405,000	Colorado	11, Poultry, E.C.
Maid of Erin	—	—	1 0	—	1 0 0	575,000	Colorado	43, Threadneedle-st.
Mammoth Gold ...	—	—	1 0	—	1 0 0	400,000	Pinal Arizona.	257, Winchester Hs.
Mesq. d'l Oro (P) G	¾ 1⅛	1⅛	5 0	—	5 0 0	10,000	Mexico	Dashwood Ho., E.C.
Mesq. d'l Oro (D) G	⅛ ⅜	⅜	5 0	—	5 0 0	10,000	Mexico	Dashwood Ho., E.C.
Montana	5/6 6/-	7/3	1 0	5% April '91	0 19 0	880,000	Montana	Gresham House, E.C.
Mount Hecla	—	—	1 0	—	0 17 0	65,000	Colorado	Abchurch Chbrs E.C.
N.Consolidated SC	—	—	1 0	—	1 0 0	160,000	Eberhardt, U.S	19A, Coleman-street.
N. Eberhardt..... G	⅛	⅛	5/-	—	0 3 6	248,576	Nevada	15, Angel-court, E.C.
N. Gold Hill.....G	—	—	1 0	—	0 19 9	491,045	N. Carolina ...	15, George-st., E.C.
New Guston .....S	7/- 8/-	8/-	1 0	1/- Oct. '92	1 0 0	110,000	Colorado	25A, Old Broad-st.
New London	—	—	2/6	—	0 2 6	327,816	New Carolina	55, Bishopsgt.-st. Wn
N. Hoover Hill... G	—	—	10/-	-/9 Dec. '85	0 10 0	120,000	N. Carolina ...	Langthorne Ho., E.C
Palmarejo ..... GS	1/3 1/9	1/9	1 0	—	1 0 0	418,888	Mexico	4, Copthall-buildings
Pinos Altos.....GS	—	—	1 0	-/6 Mar.' 90	1 0 0	300,000	Mexico	110, Cannon-street.
Pittsburg Con. G	—	—	1 0	1/6 Mar. '88	1 0 0	77,147	Nevada	Suffolk House, E.C.
Poorman Con.....	5/9 6/3	6/-	5/-	—	0 5 0	273,948	Idaho	5, Copthall-b gs. E.C.
Red Mountain ...S	—	—	1 0	—	1 0 0	46,656	Colorado	11, Poultry, E.C.
Richmond ...GSL	¾ ⅝	10/-	5 0	1/- Sep. '93	5 0 0	50,000	Nevada	44, Coleman-street.
Ruby ....GSL	—	—	5/-	—	0 5 0	221,371	Nevada	22 St. Mary Axe.
Sierra Butter ...G	8/- 10/-	10/-	2 0	-/6 Oct. '93	2 0 0	122,500	California	138, Leadenhall-st.
Do. Plumas Eur. G	11/3 13/9	13/9	2 0	-/9 Oct. '93	2 0 0	140,263	California	138, Leadenhall-st.
Springdale.....G	3/- 3/6	3/6	$1	—	$1	1,000 000	Colorado	20, Abchurch Lane.
United Mexican S	1/- 1/6	1/6	1 0	2/6 May, '87	1 0 0	906 654	Mexico	3, Gt. Winchester st.
Viola (New).....	—	—	1 0	—	1 0 0	150,000	Idaho	Broad-st. House, E.C.

SOUTH AND CENTRAL AMERICAN MINES.

Antio. (Pref.) G.S.	—	—	1 0	-/6 Mar. '90	1 0 0	22,458	Colombia	184, Gresham House
Antioquia (ordiny)	—	—	1 0	—	1 0 0	42,453	Colombia	184, Gresham House
Callao Bis.....G	-/6 -/9	-/9	1 0	—	1 0 0	320,000	Venezuela ...	50, Old Broad-street.
Camarones.....C	⅝	¾	2 0	—	2 0 0	67,000	Chili	123, Bishopsgt. Wn.
Caratal.....G	-/4½ -/6	-/7½	2 6	—	0 2 4	657,326	Venezuela ...	57, Moorgate-st. E.C.
Coton .....G	-/6 1/-	1/-	1 0	—	1 0 0	200,000	Colombia	5, Copthall-bldgs., E.C.
Colorado Nit. ....N	2 2¼	2¼	5 0	7/6 May, '89	5 0 0	32,000	Chili	17, King-st., Liverp'l.
Colombian Hy..G	17/8 18/8	16/	1 0	1/- Dec. '93	1 0 0	50,000	Colombia	10, Blomfield-street.
Copiapo C	1 13/16 1 13/16	1 13/16	2 0	2/- Dec. '93	2 0 0	100,000	Chili	Dashwood House, E.C.
Darien.....G	—	—	1 0	—	1 0 0	71,359	Colombia	Manchester.
Don Pedro.....G	7/6 8/6	8/-	1 0	—	1 0 0	133,102	Brazil	24-5, Devonsh. Ch E.C.
El Callao .....G	16/3 18/9	18/3	5 0	2 fre. Nov.,'90	5 0 0	287,600	Venezuela ...	8, Bishopsgt.-st., Wn.
Frontino & B....G	18/- 20/-	20/-	1 0	1/6 Dec. '93	0 19 6	128,662	Colombia	184, Gresham House.
Glenrock .....G	2/6 3/-	2/9	1 0	—	1 0 0	199,948	Argen. (& Ind)	3-5, Queen-street, E.C
Glenrock (pref.)...	—	—	1 0	—	0 16 0	16,232	Argen. (& Ind)	3-5, Queen-street, E.C
Gravel.....G	4/6 5/6	5/-	1 0	—	0 19 0	100,000	Colombia	10, Blomfield-street.
Javali .....G	—	—	2/-	12½% June '90	0 2 0	105,234	Nicaragua.....	139, Cannon-street.
Julia Nit. .....N	2/- 4/-	4/-	5 0	—	5 0 0	22,000	Chili	73¼, Gracechurch-st.
Lautaro .....N	2⅞ 3⅛	3⅛	10 0	10/- Sep. '89	10 0 0	25,000	Chili	70, Gracechurch-st.
Liverpool .....N	7⅛ 8⅛	8⅛	5 0	15/- Aug '89	5 0 0	32,000	Chili	Liverpool.
Loma .....G	1/3 1/9	1/6	1 0	—	1 0 0	300,000	Colombia	5, Copthall-buildings
London Nit.....N	—	¾	5 0	30% Feb. '89	5 0 0	10,000	Chili	9, Gracechurch-st.
LondonNit.(Pref.)	—	—	5 0	15% Feb.'89	5 0 0	22,000	Chili	9, Gracechurch-st.
Macate	1/6 2/6	2/6	2/-	—	0 1 0	—	Peru	11, Old Broad-st, E.C
Orita ....G	3/- 3/6	2/9	1 0	1/- April '89	1 0 0	30,000	Colombia	10, Blomfield-street.
Ouro Preto ... .G	—	—	1 0	—	0 18 6	80,000	Brazil	6, Queen-street-place
Panuicillo C	—	—	2 0	1/- Nov.'89	2 0 0	112,500	Chili .....

"THE MINING JOURNAL" SHARE LIST (African Mines continued).

Name.	Closing Price, Feb. 16, 1894.	Closing Price, Feb. 9, 1894.	Par.	Latest Dividend.	Called up Per Share.	Shares Issued.	Situation of Mine.	Head Office.
			£ s.		£ s. d.			
Joe's Luck.....G	1/6 2/6	3/-	1 0	—	1 0 0	57,424	De Kaap	11, Queen Vic.-st.
Jubilee .....G	6⅝ 6¾xd	6¾	1 0	30% Oct. '93	1 0 0	20,000	Witwatersrdt.	8, Old Jewry.†
Jumpers .....G	3⅝ 3⅝xd	3⅞	1 0	10% Jan. '93	1 0 0	100,000	Witwatersrdt.	29, Holborn Viaduct.†
Kleinfontein .G	6/- 6/6	6/6	1 0	—	1 0 0	150,000	Witwatersrdt.	8, Old Jewry.
Klerkadorp ....G	— —	—	1 0	—	1 0 0	140 007	Transvaal	110, Cannon-street.
Knight .....G	16/- 16/6	15/6	1 0	—	1 0 0	250,000	Witwatersrdt.	19, Bury-street, E.C.
Langlaagte Est. G	3¼ 3⅝	4	3 0	20% July, '92	1 0 0	467,000	Witwatersrdt.	59, Holborn Viaduct.†
Lisbon-Berlyn .. G	2/10½ 3/1½	2/9	2 6	—	0 1 6	889 233	Lydenburg ...	110, Cannon-street.
Luipaards Vlei Est.	9/3 9/9	8/6	1 0	6% Mar. '90	1 0 0	344,093	Witwatersrdt.	8, Old Jewry.
Main Reef .....G	4/9 5/3xd	5/6	1 0	—	1 0 0	300,0 0	Witwatersrdt.	Warnford-court.†
Manica Ophir	— —	—	1 0	—	1 0 0	96,000	Mozambique..	2, Pinner's Court.
May Consol. .....G	10/3 10/9	10/6	1 0	—	1 0 0	430,000	Witwatersrdt.	4, Lothbury.†
May Deep Level G	8/- 9/-	7/6	1 0	—	1 0 0	144,000	Witwatersrdt.	31, Cornhill, E.C.
Metropolitan ... G	1⅛/9 16/3	1⅛/3	1 0	—	1 0 0	75,000	Witwatersrdt	1, Crosby Square.†
Meyer & Charl....G	5⅜ 5⅛	5⅛	1 0	35% July '93	1 0 0	71,687	Witwatersrdt.	Warnford-court.†
Mitchell .....G	— —	—	1 0	—	1 0 0	45,000	Witwatersrdt.	Kimberley.
Modderfontein .G	7/- 7/6	6/-	1 0	—	1 0 0	200,000	Witwatersrdt.	Warnford-court.†
Moodies G.&E....G	9/- 10/-	10/-	1 0	-/4 May '90	1 0 0	240,000	De Kaap	8, Old Jewry.†
Moodies (15/- p.)G	4/6 5/6	2/6	1 0	—	0 10 0	120,000	De Kaap	8, Old Jewry.
Namaqua C	15/- 20/-	20/-	2 0	2/6 July '91	2 0 0	194,351	Namaqualand.	34, Leadenhall-bldg.
New Chimes..... G	1⅜ 1⅜	22/6	1 0	—	1 0 0	70,000	Witwatersrdt.	8, Old Jewry, E.C.
New Croesus..... G	1⅛ 1⅜	1⅜	1 0	5 % Aug. '92	1 0 0	195,000	Lynglaagte	4, Bishopsgt.-st. Wt.
New Jagersf. ....D	14¾ 14¾	14¾	10 0	—	10 0 0	100,000	Transvaal	5, Copthall-buildings
New Primrose ...G	3¹³⁄₁₆ 3¹⁵⁄₁₆	4⅛	1 0	4/- July, '93	1 0 0	230,000	Witwatersrdt.	2, Draper's-gardens.
Nigel .....G	2¹⁵⁄₁₆ 3	3⅛	1 0	10% Dec. '93	1 0 0	160,000	Witwatersrdt.	1, Crosby-square.
Nooitgedacht E. G	— —	—	1 0	—	1 0 0	160,000	Lydenburg ...	8, Old Jewry.
Oceana .....G	2⅝ 2¹³⁄₁₆	1⅞	1 0	25/- Nov. '89	1 0 0	150,000	Transvaal	4, Sun Court, E.C.
Ophir Concess. ...	-/9 1/3	1/3	1 0	—	0 18 0	111,857	E. CoastAfrica	31, Lombard-street.
Orange F.S.E. ...D	3¾ 4¼	4	1 0	—	1 0 0	234,000	OrangeF.State	10, Moorgate-street.
Oriental .....G	1/6 2/-	2/-	1 0	—	1 0 0	448,450	De Kaap	Jamaica-bgs.Cornhill
Otto's Kopje.....D	1/- 1/6	1/6	1 0	—	0 19 3	500,000	Kimberley ...	110, Cannon-st.,E.C.
Paarl Central... G	17/6 18/6	16/6	1 0	—	1 0 0	138,750	Transvaal	29-30, Hol. Via., E.C.
Piggs Peak .....G	-/3 -/9	-/9	1 0	—	1 0 0	230,326	Swaziland ...	6, Queen-street-place
Potchefstroom ... G	2/- 2/6	2/6	1 0	—	1 0 0	161,000	Potchefstroom	19, Bury-st., E.C.
Princess Estate G	15/- 17/6	17/6	1 0	—	1 0 0	72,046	Witwatersrdt.	33, Cornhill, E.C.
Randfontein .....G	10/6 11/-	10/3	1 0	—	1 0 0	1,966,500	Witwatersrdt.	59, Holborn Viaduct.†
Read's Drift .....D	9/- 10/-	5/6	1 0	—	—	50,000	Transvaal	19, Finsbury-circus.
Robinson .....G	4⅝ 4¹¹⁄₁₆	4⅝	5 0	4% June '93	5 0 0	543,750	Transvaal	55, Holborn Viaduct.†
Roodepoort Un. G	— —	—	1 0	—	1 0 0	100,000	Witwatersrdt.	Warnford-court.†
St. Augustine ...D	-/4½ —	—	1 0	—	1 0 0	465,000	Griqualand W	30-1, St. Swithin's-la
Salisbury New ...G	2¼ 2⅝	2½	1 0	—	1 0 0	93,000	Witwatersrdt.	1, Crosby-square.†
Sheba .....G	22/6 23/6	23/-	1 0	-/6 Aug., '93	1 0 0	614,450	Lydenburg ...	18, St. Helen's-place.
Silati .....G	3/6 4/-	1/9	1 0	—	1 0 0	625,000	Zoutpansberg.	4, Sun Court, E.C.
Simmer & Jack...G	4⅜ 4⅝	4⅛	1 0	10% Nov '93	1 0 0	85,000	Witwatersrdt.	33, Cornhill.
S.A. Gold Trust ...	18/- 19/-	15/6	1 0	10% April '93	0 10 0	220,000	South Africa..	8, Old Jewry.
Spitzkop .....G	1/9 2/3	2/3	1 0	—	1 0 0	144,531	Lydenburg ...	15, Bishopsgt-st, Wt.
Stanhope ..... G	1⅛ 1⅜	1⅜	1 0	50% May. '93	—	34,000	Witwatersrdt.	1, Crosby Square.†
Sutherland R. ...G	— —	2/9	1 0	—	0 17 6	220,000	Zoutpansberg.	3, Budge-row, E.C.
Tentonia ..... G	— —	—	1 0	—	1 0 0	96,000	Witwatersrdt.	8, Old Jewry.
Trans. Coal Trust...	11/6 12/-	—	1 0	-/6 Oct, '93	1 0 0	439,965	Witwatersrdt.	Broad-st, House, E.C
Trans. Est. & Dev.	11/6 12/6	10/6	1 0	—	1 0 0	285,700	Transvaal	76, Old Broad-st. E.C.
Trans. Gold .....G	— —	—	1 0	1/- Dec, '93	1 0 0	250,000	Transvaal	Suffolk House, E.C.
Trans. Land(14/3p)	3/- -/-	3/-	1 0	—	1 0 0	250,695	Transvaal	33, Cornhill.
Un. Ivy Reef.....G	20/- 22/6	14⅛	1 0	—	1 0 0	45,000	Transvaal	110, Cannon-street
Un. Langlaagte ...	12/6 15/-	15/-	1 0	—	1 0 0	100,000	Witwatersrdt.	23, St. Swithin's-la.
Van Ryn ..... G	8/9 11/3	11/-	1 0	—	1 0 0	99,810	Witwatersrdt.	1, Crosby-square.†
Victory Hill .....G	— —	—	1 0	—	1 0 0	108,000	De Kaap	Portland House, E.C.
Village Main Reef	4¼ 4⅜	3¾	1 0	—	1 0 0	132,000	Witwatersrdt.	8, Old Jewry.
Virginia .....G	— —	—	1 0	—	1 0 0	48,335	Transvaal	26, Budge-row, E.C
Vogelstruis .....G	— —	—	1 0	—	1 0 0	150,000	Witwatersrdt.	34, Leadenhall-bldgs.
Wemmer .....G	4⅝ 4⅝	4⅞	1 0	10% Nov. '91	1 0 0	55,000	Witwatersrdt.	19, Bury-street.†
Witwatersrandt ...	— —	—	1 0	—	1 0 0	250,000	Witwatersrdt.	19, Bury-st., E.C.
Wolhuter .....G	2⅝ 2⅞	2⅝	1 0	—	1 0 0	120,000	Witwatersrdt.	Warnford-court.†
Worcester .....G	1¾ 2	1⅝	1 0	—	1 0 0	90,727	Witwatersrdt.	8, Old Jewry.†
Zwartland Land ...	— —	—	1 0	—	0 16 0	150,000	Transvaal	19, Birchin-lane, E.C

MINING IN CORNWALL AND DEVON:

NOTES ON WESTERN MINING, EDITORIAL AND OTHERWISE.

MATTERS alike in the share and in the tin market seem steadily going from bad to worse, and when a gleam of hope comes one week, it is outbalanced by deeper gloom the next. The position is a most unfortunate one, and no one seems to have the smallest idea what the end of it all will be. All foresight and forecasts seem mere vain waste of time; and the best informed really have nothing better to propose than to wait from week to week to see what may chance to turn up. In all our experience we certainly cannot recall a time of greater uncertainty, or one in which those who are generally regarded as leading authorities are more thoroughly at fault.

BUSINESS in the share market for once really follows very closely the fluctuations of the price of the metal, which is far from being always the case—that is, so far as the quantity of the business done is concerned—in its quality as to prices there is comparatively little change. And as the price of tin has fallen below any figure recorded for the past 15 or 16 years, the state of the share market is self-evident. As to the ticketing, it was most depressing, and the only point about it which in ordinary circumstances would be deemed satisfactory, was the increase in the quantity sampled. Even that, however, now seems to count in the reverse way.

WHEAL GRENVILLE meeting, held last week, shows that the mine is in a most healthy condition, and that its future is assured. An enormous amount of work has been got through within the past three or four years, and Captain Bishop deserves all the compliments that were showered upon him by the shareholders. Mr. R. W. Goold, the Chairman of the company, is a diplomatist, as well as an able financier, and the advice he offered to the adventurers cannot but be productive of thoughtfulness in directions where that commodity has up to now been very scarce. But we know that Cornish mines often have a hard struggle, and that the shareholders are only too glad of every ounce of available tin to be raised and realised. Where the mine can afford it, however, whenever tin is at an unnaturally low price, as is the case at present, Mr. Goold's policy of "masterly inactivity"—the raising of only sufficient stuff to meet the costs of the question—is the wisest and the best that can be adopted.

ENOUGH has already transpired in regard to that most unfortunate concern—Wheal Uny—to show that a thorough examination into its affairs would lead to plenty of edifying or unedifying, as the case might be, revelations. And we think we may as well go a little further and say that, however unwelcome, or, indeed, unpleasant in any quarters these revelations may prove, it is the clear duty of those who have the examination of the affairs of the mine in hand to probe them to the uttermost, and that not merely for the sake of those who are interested in Wheal Uny, but for the sake of Cornish mining and adventurers at large. Whatever the facts, let us have them out.

THE following circular has been addressed to the shareholders of the Prince of Wales Mine:—In consequence of the continued low price of tin, and with a view of reducing the monthly cost to a minimum, the directors have deemed it advisable to temporarily stop all operations at the mine, with the exception of the driving of the crosscut at the 193 to intersect the lode at that depth. The monthly cost hitherto has been about £650, whereas for the immediate future it will be reduced to about £150. The directors hope by this action to improve the financial position of the company. From the latest reports from the mine there is reason to believe that the lode at the 193 will shortly be intersected. All underground works have been left in perfect order, so that operations may be resumed without extra cost whenever circumstances will allow.

THE inquest on the young fellow Ellis, who succumbed to injuries received at Botallack, where he was severely scalded by an unexpected escape of steam, revealed nothing sensational. Joel Pascoe, who was working with Ellis at the time, did not return from the North of England to give evidence, but the jury found no difficulty in attributing Ellis's death to his own conduct in disobeying the order of the foreman in charge of the job. This foreman, Leggo by name, informed the coroner that neither Ellis nor Pascoe "hardly knew what an engine was." Yet we have it that they were left to carry out repairs which cost one of them his life, and evidently frightened the other half to death. We fear there is a good deal of carelessness, some of it positively wilful carelessness, as to what kind of men are put to do skilled work in many of our Cornish mines. A man for three pounds a month, not three pounds a week, is expected to be able to turn his hand to anything, and, as often as not, half believes himself to be competent until disaster overtakes him.

THE committee of Wheal Agar are about to act upon the advice we tendered them in this column a month or two back. They are advertising for a competent manager to take charge of the mine. We understand that Captain Daniel and his colleague remain at Agar as agents.

MR. T. H. TREWEEKE will hold a fifth preliminary meeting at the Star Hotel, Penzance, on Thursday, the 1st March next, at three o'clock p.m., when he will further address the public upon mining matters.

LATEST FROM THE MINES.

CABLEGRAMS AND TELEGRAMS.

BIRTHDAY GOLD.—699 tons produced 325 ounces; 29 days working.

BUFFELSDOORN ESTATE AND GOLD.—Result of last month's crushing yielded 3010 ounces of gold. Delayed by heavy rains.

CHIAPAS.—The directors have received the following cablegram:—"During January the mill ran 30 days: 1250 tons of ore were crushed, yielding 60 tons of concentrates."

CROWN REEF.—Results for January, 1894, received per cablegram from Johannesburg, S.A.R.:—"Number of days working 90 stamps, 29 days 5 hours; tons crushed by mills, 9388; tons of tailings and concentrates treated by cyanide works, 12,150; yield in smelted gold from mills, 3651 ounces; yield in smelted gold from cyanide works, 3127 ounces=6778 ounces. Revenue per ton crushed £2 9s. 7·181.; cost per ton £1 14s. 3·38d.; profit per ton, 15s. 3·80d."

ELKHORN.—Bullion produced in the mill for the week ending February 10, 9500 ounces.

EXPLORATION COMPANY.—(Alaska Mexican Gold Mining Company)—Cablegram from Alaska reports the first clean-up as follows:—"Period since mill was started 42 days; mill ran 39 days; bullion shipped $17,556; ore milled 7808 tons; ore mined 11,587 tons; sulphurets treated 68 tons; of bullion there came from sulphurets $2160; sulphurets on hand 77 tons; working expenses for period $10,926; construction expenses for period $2426. Expect to do much better next month." The superintendent's mail advices states that the ore crushed during above run was the accumulation from development drifts, being of lower average grade than the ore he expects to mine and mill in the future.

FERREIRA.—Copy of cablegram received from Johannesburg:—Results for January, 1894: "Tons crushed, 3621; bar gold extracted, 4194 ounces; concentrates caught, 135 tons; assay value of concentrates, 6 ounces 16 dwts. 8 grains fine gold per ton.—Cyanide works. Bullion produced from tailings, 1049 ounces."

FRONTINO AND BOLIVIA.—The directors have received advices from the mines for the month of December, 1893, viz:—Produce, value £5363 10s. 5d.; cost, £3981 7s.; estimated excess of returns, £1382 3s. 5d.

GELDENHUIS ESTATE AND GOLD.—A cablegram has been received from the head office at Johannesburg, stating the following results for last month (January, 1894):—"Crushed 10,270 tons; obtained 3481 ounces of gold; profit for month, £2600."

GELDENHUIS MAIN REEF.—"In January 450 ounces of gold was obtained from cyanide works."

GLENCAIRN MAIN REEF.—Production for January 3004 ounces.

GRAVEL GOLD MINES OF COLOMBIA.—The directors have received a cablegram from their superintendent stating that he has commenced connecting the new ditch with the mine pipe line. The work will take from three to four weeks to complete. This new ditch takes the place of the Rica syphon and will give increased water pressure. The result of the washing thus far proves conclusively that the gravel banks will yield a fair profit and that they are improving in value as the works advance.

GUADALCAZAR QUICKSILVER.—The quantity of quicksilver drawn off for the week ending February 8, as cabled from the mines, amounts to 4500 lbs.=90 flasks.

GYMPIE 2 GREAT EASTERN.—Mr. Samuel James has received the following information by cable from Gympie:—"Crushed 1662 tons, yielding 1286 ounces of gold. Dividend 1s. per share."

HARQUAHALA.—The following cablegram has been received to-day: Shaft has reached a depth of 255 feet; the two shafts are now connected; now cutting station; new air compressor and diamond drill are now working.

JAY HAWK AND LONE PINE.—The directors have received the following telegram from the manager—viz.: "Mill returns for last week show 8800 ounces. Everything is going right."

JOHANNESBURG PIONEER.—Output for month of January, 786 ounces of gold.

LANGLAAGTE ESTATE BLOCK B.—Production for January, 1894, by cable:—"Mill. Ore crushed, 4540 tons of 2000 lbs.; gold retorted, 1278 ounces.—Tailings, cyanide process. Tons treated, 9556 tons of 2000 lbs.; smelted gold recovered, 971 ounces; total gold recovered, 2249 ounces."

LANGLAAGTE ESTATE AND GOLD.—Production fo January, 1894, by cable:—"Mill. Stamps running, 160; ore crushed, 22,447 tons of 2000 lbs.; gold retorted, 6028 ounces.—Tailings, cyanide process. Tons treated, 28,600 tons of 2000 lbs.; gold recovered, 5064 ounces.—Concentrates, cyanide process. Tons treated, 340 of 2000 lbs.; gold recovered, 1011 ounces; total gold recovered, 12,103 ounces."

MOODIES.—The following are the returns from the company's property for the month of January: Claims rented or leased from the company, 264; number of tons crushed by claimholders, 880; yield of gold from ditto, 550 ounces.

MOSMAN GOLD.—The directors have received the following cablegram from Charters Towers:—"Have crushed during the fortnight 276 tons of quartz from the Wyndham shaft for 274 ounces of gold. The expenses (of both the Wyndham and North Australian Mines for the fortnight are £1000. I estimate the value of the stone at grass (upon which mining expenses have been paid) at £2000." The approximate value of the above return is £950.

MOUNT ZEEHAN (TASMANIA).—The following telegram has been received from Hobart, dated 13th inst.:—"Have treated during the past fortnight 300 tons of ore, yielding 37 tons 10 cwts. of concentrates, containing about 28 tons 2 cwts. of lead and 2625 ounces of silver."

NEW PRIMROSE.—Production for January 8001 ounces; 100 stamps, 29 days, profit £12,000. The board have decided to erect a further 60 stamps, making, when completed, 160 stamps of 950 lbs. each.

NEW RIETFONTEIN.—Crushed 2433 tons; obtained 1946 ounces of gold. Cyanide works treated 1997 tons of tailings, yielding 841 ounces; concentrates, 61 ounces; total, 2848 ounces.

NEW SPES BONA.—The following telegram has been received: "During the month of January the mill ran 20 days, crushing 3874 tons, producing 1167 ounces of gold; treated by cyanide, 5990 tons yielding 1140 ounces." By supplementary agreement with the Wolhuter, the company continued to mill for them with 15 stamps for seven days during January. As already advised milling was resumed for the company's account on 5th January with 25 stamps, and about 16th idem with 50 stamps, the result being an average of 20 days with 50 stamps.

NOOITGEDACHT (LYDENBURG).—January crushing 1400 tons, produced 167 ounces of free gold on the plate. Mill ran 20 days.

1 NORTH GLANMIRE.—Crushed 683 tons, yielding 499 ounces of gold. Dividend 6d. per share.

ORION.—The London agents of the company have received the following cable: "Have declared a dividend of 10 per cent."

ORITA GOLD.—The directors have received the following cablegram from their superintendent relating to run No. 74:—"We have cleaned up £500, the profit on which is £300."

RANDFONTEIN ESTATES.—Production for January, 1894, by cable:—"Mill. Stamps running, 40; ore crushed, 5157 tons of 2000 lbs.; gold retorted, 3046 ounces.—Tailings, cyanide process. Tons treated, 4900 of 2000 lbs.; gold recovered, 748 ounces; total gold recovered, 3794 ounces."

ROBINSON.—Production for January, 1894, by cable:—"Mill. Stamps running, 60; ore crushed, 8010 tons; gold smelted, 10,068 ounces. Tailings, cyanide process: Gold recovered, 1263 ounces. Concentrates, chlorination process: Gold recovered, 1149 ounces; from concentrates bought, 1770 ounces. Total gold recovered from own ore 12,480 ounces. Total production, 14,250 ounces."

ROYAL SILVER MINES OF POTOSI.—The secretary has received cable advice that the production for January amounted to 39,960 ounces fine.

TRANSVAAL COAL TRUST.—The following is copy of a cablegram which has been received from the Transvaal Coal Trust Company (Limited), at Johannesburg, with reference to the operations of that company for the month of January:—"Output, 20,300 tons; profit, £3500."

VICTORIA GOLD MINING ASSOCIATION.—The following cablegram, dated 12th instant, has been received at the London office:—"280 tons crushed, yielded 539 ounces gold for fortnight."

VILLAGE MAIN REEF.—Mill ran 22 days, crushed 2500 tons, which yielded 1950 ounces free gold and 64 tons of concentrates, assaying 6 ounces, tailings assayed 6 dwts.

WOLVERAND GOLD.—Copy of return to the Transvaal Government of test crushing on the Wolverand Gold Mines (Limited):—"Quantity of ore crushed, 250 tons; gold won, 52 ounces; gold won per ton of ore, 4 dwts. 3·16 grains; assay value of tailings average 8¼ dwts." The above result shows the ore to run over 12½ dwts. to the ton.

WORCESTER EXPLORATION.—Result of last month's crushing yielded 1867 ounces of gold. Have declared a dividend of 10 per cent., payable on the 10th day of March to all shareholders registered on the 10th day of February.

The LISTS will OPEN on SATURDAY, the 17th inst., and CLOSE on TUESDAY MORNING, the 20th inst., at 10 A.M., for both Town and Country.

Extract from Speech of His Excellency, Sir WILLIAM C. F. ROBINSON, G.C.M.G., Governor, on the opening of Parliament:—

"The discoveries of Gold in so many parts of the Colony seem to strengthen the general opinion that Western Australia is to become one of the great Gold-producing parts of the world."

Extract from Speech of the Premier, Sir JOHN FORREST, K.C.M.G., in the Legislative Assembly:—

"I am very glad to say that our anticipations as to the presence of the precious Metal in the Colony are likely, so far as I can judge not only to be realised, but to be far exceeded. We intend to continue to do all we can to assist in developing our mineral resources, especially our Gold Fields to the Eastward, because we feel that the great future which we are looking forward to for this Colony is considerably wrapped up in the development of these fields."

WEST AUSTRALIAN GOLD FIELDS,

LIMITED.

20,000 Shares of the present issue have already been applied for.

Capital, £100,000,

In 100,000 Ordinary Shares of £1 each, of which 65,000 are now offered for Subscription, payable as follows:—

2s. on Application; 2s. on Allotment; and the balance in calls not exceeding 4s. each, as and when required at intervals of not less than two months.

Directors—London.

The Right Hon. Lord Castletown, Director Hampton Lands and Railway Syndicate (Limited).
Sir Hugh Montgomery, Bart., 24, Aldford Street, Park Lane, W.
Sir Charles Crauford, Bart., Director African and Australian Gold Recovery Companies.
G. W. Brown, Esq., Director Hampton Lands and Railway Syndicate (Limited).
R. Herbert Lapage, Esq., M.I.C.E. (who has recently returned from the Coolgardie and Yilgarn Gold Fields.

Local Board of Management in West Australia.

Alex Forrest, Esq., M.L.A. (Mayor of Perth), Chairman, Central G.M.Co., Yilgarn, W.A.
H. J. Saunders, Esq., A.M.I.C.E., Perth, W.A.
Lord Percy Douglas, F.R.G.S. (one of the earliest Prospectors at Coolgardie), W.A.

Bankers.

Messrs. Prescott, Dimsdale, Cave, Tugwell, and Co. (Limited), 50, Cornhill, E.C.
British Linen Company Bank, Edinburgh, and Branches in Scotland, and 41, Lombard Street, London, E.C.
Solicitors.—Messrs. Burn and Berridge, 11, Old Broad Street, E.C.
Consulting Engineers.—Messrs. Bewick, Moreing, and Co., London, South Africa and West Australia.

Brokers.

LONDON { Messrs. Malcolm Cooke and Lemon, 65, Old Broad Street, E.C.
LONDON { Messrs. Barber and Bridgford, 2, Draper's Gardens, E.C.
EDINBURGH—Messrs. Hardie and Turnbull, 42, George street.
GLASGOW—James Kirkwood, Esq., 7, Royal Bank Place.

Auditors

Messrs. Ford, Rhodes, and Ford, College Hill, E.C., Chartered Accountants.

Manager and Secretary.

A. H. P. Stoneham (Messrs. Monkhouse, Goddard and Co.)

Offices.

28 and 29, ST. SWITHIN'S LANE, LONDON, E.C.

ABRIDGED PROSPECTUS.

THIS Company has been formed to conduct the business usually carried on by an Exploration and Agency Company, more particularly in the Colony of Western Australia.

Few persons in this Country have any knowledge of the extent and mineral resources of Western Australia, but it is probably the Colony which has the brightest immediate future. Many kinds of Minerals exist therein, and the total area of proclaimed Gold Fields now exceeds 130,000 square miles.

A comparison between the progress of the Western Australian Gold Fields, and the early results from the South African Gold Fields, shows that whilst 17 years elapsed before the South African Fields produced £200,000 of gold, the Fields of Western Australia exceeded that sum in the seventh year, and also shows that the output for the first seven years of the West Australian Fields has been more than double the output for the first seven years, and has exceeded by nearly £70,000 the output for the first 14 years from South Africa; these results have been obtained, notwithstanding the fact that hardly any of the Mines in Western Australia have (owing to lack of capital) yet been efficiently worked, and that a very small portion of the Gold bearing area has yet been prospected.

MURCHISON GOLD FIELD.

The Murchison Gold Fields were only proclaimed in September, 1891, but during the first eleven months of 1892 the value of the output from these Fields was nearly £80,000.

The Report of the Geologist appointed by the Colonial Government concludes as follows:—

"This Field, taken as a whole, is exceedingly rich, and will in all probability be found to extend for a great distance to the eastward. . . . Water is abundant, and at shallow depths."

YILGARN GOLD FIELD.

The Yilgarn field is in a more advanced stage than any other in Western Australia, and has more machinery erected upon it; but it is believed that the appliances for saving Gold are quite inadequate, and that many improvements and economies could be effected by the expenditure of further capital. The subjoined return taken from the Government Year Book of all the Ore milled on the Yilgarn fields to the end of July, 1892, gives the following very satisfactory results:—

Tons.	Yield. Ozs. dwts. grs.	Value.	Average. Ozs. dwts. grs.
29,161	29,801 18 6	£109,130 8 0	1 1 4

Note.—The average of the Ore crushed in the "Randt" (S. Africa) is only about 10 dwts. per ton.

The Government is extending the existing Railway a distance of 163 miles to the Yilgarn Gold Fields. 120 miles of the extension have already been opened, and the completion of the remainder is being rapidly pushed on by the Government. The drawbacks to this field at present are cost of transport and scarcity of water. The first will be removed by construction of the Railway, and the second will, it is believed, be removed by the Government storage tanks and artesian bores now being constructed.

COOLGARDIE GOLD FIELD.

An extraordinarily rich discovery of Gold has been made within the last 18 months at Coolgardie, about 112 miles from the termination of the Yilgarn Railway. The Australian newspapers state that the discovery exceeds in richness any previous discovery made on the Australian Continent. Mr. Sylvester Browne, when asked his opinion of the Coolgardie Gold Fields by an interviewer, is reported to have replied—"There is very little doubt that it is going to be one of the finest reefing Fields ever discovered in Australia. There are numberless reefs, and all of good size. Wherever a prospector has sunk on a reef he has invariably found it to carry Gold, and the country is most favourable, with reefs going down all through it." 3000 men are now on the Fields, and many claims have been taken up which the owners are unable to develop for want of capital.

THIS COMPANY'S COOLGARDIE CONCESSION.

Under terms of and subject to the conditions of Contracts mentioned below, this Company obtains a right to prospect on 216,000 acres of land in the Coolgardie district, which was acquired from the Government before the recent discoveries. This land is not subject to the regulations of the Mining or Gold Fields Acts, but is subject to a Government Royalty of 2s. per ounce of Gold and 2½ per cent. of Silver. The contracts give the right to select blocks containing in the whole 600 acres, viz., 500 acres on the reefs, and 100 acres of alluvial land. Valuable timber and water rights are conferred by the contracts, and also the option to exchange original blocks found unproductive after prospecting, and to purchase the freehold of any blocks selected for £5 per acre. One third of the net profits accruing to the Company from mining on this land will be payable to the Hampton Lands and Railway Syndicate (Limited).

Mr. Saunders has already sent out machinery for prospecting purposes, including a "dry process" plant, so that no time need be lost in getting to work; the Company has the option of purchasing this machinery at cost price.

LOCAL MANAGEMENT.

The local affairs of the Company will be administered by Mr. H. J. Saunders, C.E., Mr. Alex. Forrest, and Lord Percy Douglas. Mr. Saunders, who is an ex-President of the Stock Exchange, Perth, W.A., is well known to the Agent General Sir Malcolm Fraser, K.C.M.G., and several of the leading firms trading with Western Australia. Mr. Alex. Forrest is brother to the Premier of the Colony, and has had a large experience in regard to mining and commercial matters. Lord Percy Douglas is intimately acquainted with the Gold Fields, having himself mined at Coolgardie, where he has determined to settle. Lord Percy has now returned to Western Australia.

An Agreement mentioned below has been entered into with Messrs. Bewick, Moreing, and Co., by which that Firm undertake to open a branch business in Western Australia, under the management of their Mr. W. A. Mercer, A.M.I.C.E. and M.A.I.M.E., and act as Advisory and Consulting Mining Engineers on favourable terms to the Company. Mr. Mercer is already on his way to the Colony.

Mr Saunders has fixed the purchase price to be paid to him for his interest in the above-mentioned contracts at £20,000, payable as to £17,500 in fully paid up shares in the Company, and as to the balance in cash. Mr. Saunders pays all expenses of formation of the Company, down to and including allotment, but reserves the right to apply for and have allotted to him 17,500 shares at par prior to 31st December, 1894.

The following contracts have been entered into:—Three agreements dated the 16th June, 1893, and the 9th and 19th January, 1894, respectively, between the Hampton Lands and Railway Syndicate (Limited), and Henry John Saunders; two agreements dated the 6th November, 1893, and the 23rd January, 1894, respectively, between Henry John Saunders and Henry Robbins, and two agreements dated 23rd January, 1894, respectively made between Henry John Saunders, Henry Robbins, and the Company, adopting the same; an agreement dated 8th November, 1893, between Henry Robbins and Messrs. Bewick, Moreing, and Co., and an agreement dated 23rd January, 1894, between the Company, Henry Robbins, and Messrs. Bewick, Moreing, and Co., adopting the same; two agreements dated the 7th December, 1893, and the 20th January, 1894, respectively, between Henry John Saunders and the Company; an agreement dated 20th December, 1893, between the said Henry John Saunders and William Driffield, an assignment dated 23rd January, 1894, of the benefit of such agreement, from the said Henry John Saunders to the Company; an agreement dated 23rd January, 1894, between the Company and Allen H. P. Stoneham, and an assignment dated 30th January, 1894, from the said Henry John Saunders to the Company.

LONDON, *7th February*, 1894.

Further information regarding the Gold Fields can be obtained from the West Australian Government Year Book and other Government Publications, and on application to the Agent General, Sir Malcolm Fraser, K.C.M.G., 15, Victoria-street, S.W.

APPLICATION FORM.

The Directors West Australian Gold Fields, Limited,

Having paid to your Bankers the sum of £..... as a deposit of 2s. per Share, on.....Shares, I request you to allot me that number of Shares, and I agree to accept and pay for the same, or any smaller number, upon the conditions of the Prospectus and the Memorandum and Articles of Association.

Name (in full) .....
Address .....
Description .....
Ordinary Signature .....
Date.....1894.

REPORTS FROM THE MINES.

We find it necessary to announce that, owing to the vast numbers of mining reports, and items of mining intelligence which reach us invariably very late—up to, and frequently after the time of going to press—it is impossible to guarantee the insertion of all of them in the issue in which, in ordinary course they should appear. We always endeavour, however, to make this important feature as complete as possible, and if the secretaries of mining companies, mining captains, and others would kindly make an effort to let their reports, etc., reach us early on Fridays, when it is not possible to let us have them earlier in the week, their doing so would go far to ensure their insertion, and to promote the completeness of our Mining Intelligence.

BRITISH MINES.

DRAKEWALLS.—J. Hosking, T. Chapman, February 14: The cross cut through the lode at the 160 fathoms level east of the engine shaft is letting out a little water, and getting through to probably the softer and more productive part of the lode. There is little change elsewhere to notice. The rainfall has been less, and we already notice an abatement of the water underground.

DEVON GREAT CONSOLS.—William Clemo, February 15: Watson's engine shaft, in the 172 fathom level east the lode is producing a little mundic and copper ores. In the 160 fathom level east the lode is yielding 3 tons of copper and mundic ores per fathom. The lode in the 148 fathom level east is still looking well, and is yielding 8 tons of copper and mundic ores per fathom. The stopes throughout the mines continue to yield large quantities of copper and mundic ores.

GREENJ HURTH.—W. Gray, February 9: Annie's Vein: The south end has improved for lead, now worth 2½ tons per fathom. The stope in the back of the above is poor at present. The drivage south from the sump on the above vein shows a decided improvement for lead to-day worth 3½ tons per fathom. South west branch above 30 level, the vein here is not so rich as previously reported, it being somewhat deranged by strings coming in from west side. The vein is turning rapidly eastward, worth 2 tons per fathom. The north end is very poor, worth only 5 cwts. per fathom.

GREAT LAXEY.—F. Reddicliffe, February 14: The sinking of Dumbell's shaft below the 290 fathoms level continues to progress fairly well, and is now down 7½ fathoms below that point. The 278 end north from this shaft has now been holed to the winze sunk from the 266 fathoms level, and the bottom of the winze is now being stoped out to form the level preparatory to driving on the level again. The value of the lode here is variable, and at no time rich, but averaging about £10 per fathom, which is also the present value. A winze in the 255 fathom level north is holed at 6½ fathoms deep to a roof working below, and a stope started by these men in the sole of level off same winze is worth £16 per fathom. The 255 end north shows no change, but it is standing at present, and for a week past, owing to the fall of a heavy horse of rock out of the side of an old roof stope, and blocking the level. This place is being secured and the rock removed. In the cross cut in the 243 fathom level south of Dumbell's shaft another branch was passed through a few days ago, there being about 5 fathoms between it and the last one reported. It is also much like it in size and composition, being 1 foot to 1½ foot wide, consisting of spar and disordered clay slate rock. This we consider to be the last branch that need be expected, and if in a few feet more cross cutting the rock becomes clean and compact, as we expect it will, we shall consider the east lode to be amply proved in this direction—that is, southward. All other points, stopes, &c., are without noticeable change.

LEADHILLS.—G. Menzies, February 12: Browns vein: Making fine progress getting the accumulated water out of Jeffrey's shaft, but the very heavy feeders are a serious drawback. The 160 fathom level north of Wilson's shaft is in a vein above 4 feet wide showing kindly stone with a good mixture of spar but without ore. The stope above the 145 north of Jeffrey's shaft is worth 30 cwts. of ore per fathom. The stope above the 130 north of Jeffrey's shaft is worth 20 cwts. of ore per fathom. The 115 fathom level north of Jeffrey's shaft is in vein above 4 feet wide charged with spar but no ore. Nos. 1, 3, and 4 above this level north of Jeffrey's shaft are worth 30, 30, and 60 cwts. of ore per fathom respectively. Cleaning out No. 2 stope. The 115 fathom level south of Wilson's shaft is in a vein above 4 feet wide showing rather dark stone for yielding ore. The sinking below the 100 north of Jeffrey's shaft is worth 25 cwts. of ore per fathom. The 100 fathom level south of Wilson's shaft is in a nice looking vein above 4 feet wide charged with quartz and spar and stones of ore not to value. The 85 fathom level south of Wilson's shaft is in a vein above 4 feet wide charged with a mixture of quartz and spar, but no ore. The winze below the 85 south of Wilson's shaft is in a vein above 4 feet wide, showing a nice rib of spar and ore worth 100 cwts. per fathom. The stope above the 85 south of Wilson's shaft is worth 80 cwts. of ore per fathom. No. 2 winze below the 70 south of Wilson's shaft is in an encouraging vein, above 4 feet wide charged with kindly spar, but without ore. The drift above the 50 south of winze is worth 25 cwts. of ore per fathom. The stope below the 35 south of flat rod shaft is worth 45 cwts. of ore per fathom. The stope above the 35 south of ditto is worth 25 cwts. of ore per fathom.—Sarrowcole Vein: Gripps adit north of George's Roust vein shows a vein above 4 feet wide, nicely mixed with spar, although without ore. Gripps adit south of George's Roust vein is a vein above 4 feet wide, mostly stone of an enticing character with a good mixture of spar, but no ore. Still very disheartening weather.

NEW MINERA.—Mining report for the two weeks ending February 9th: 255 Yard Level: Four men on tribute, estimated to produce about 10 tons lead ore and blende per month. 275 Yard Level: East of No. 2 rise on north lode, six men on tribute. Lode worth 3 tons per fathom, estimated to produce 16 tons per month. East of No. 2 Rise on South Lode: Two men on tribute. Lode worth 2½ tons per fathom, estimated to produce about 5 tons per month. Stope east of No. 2 Winze: Two men on tribute. Lode worth 2½ tons per fathom, estimated to produce 3½ tons per month. 295 Yard Level: Driving west on north lode. Stopped. Stope on North Lode west of crosscut: Lode 6 feet wide worth 3 tons blende and a little lead ore per fathom. East of Winze on South Lode: Two men on tribute. Lode worth 2 tons per fathom, estimated to produce 4½ tons per month. East of Winze on North Lode: Two men on tribute. Lode worth 2½ tons per fathom, estimated to produce 4½ tons per month. Two men on north lode near forebreast. Lode worth 2 tons per fathom, estimated to produce 4½ tons per month. 315 Yard Level: Driving east of main crosscut. Still improving and looks very promising. Stope west of Incline Shaft: Two men on tribute. Lode worth 2½ tons per fathom, estimated to produce about 5 tons per month. Stope near Forebreast: Two men on tribute. Lode worth 3 tons per fathom, estimated to produce 6 tons per month. Rise north of Incline Shaft: Two men on tribute. Lode worth 1 ton per fathom, estimated to produce 2 tons per month. Stope east of Incline Shaft: Two men on tribute. Lode worth 2 tons per fathom, estimated to produce 4 tons per month. Stope on Cross Lode North of Incline Shaft: Lode 4 feet wide, worth 2½ tons blende per fathom. 335 Yard Level: Driving east of Incline Shaft. Improved. Lode 7 feet wide, worth 3½ tons blende per fathom. West of Incline Shaft: Four men on tribute. Lode worth 2 tons per fathom, estimated to produce 9 tons per month. East of Incline Shaft: Two men on tribute. Lode worth 2 tons per fathom, estimated to produce 4 tons per month. East of Rise: Two men on tribute. Lode worth 2½ tons per fathom, estimated to produce 4½ tons per month. Dressing: 31 tons blende have been sent off since last report, making the total quantity sold 3793 tons blende and 166¼ tons lead ore.

PRINCE OF WALES.—S. Roberts and J. Prowse, February 13: Every endeavour possible is being made to push on the crosscut at the 193 fathom level, with the view of intersecting the main lode The men, eight in number relieve in place, so that no time be lost. The distance driven is now 16¾ fathoms, so we may at any time cut the lode. The ground in the present end is extremely hard, consequently progress is slow, but it is of a highly mineralised nature and when the lode is seen embedded in such a channel of ground, it can hardly fail to be found profitably productive. The last four-weekly sale of tin was 8 tons 4 cwts. 2 quarters 15 grains at £41 2s. 6d. per ton realising £338 10s. 7d.

WHEAL FRIENDLY.—February 13; In the 84 fathom end driving east of cross cut, on the flat lode, the lode is of a very promising appearance. We have broken some rich stones of tin in this end in the last few days. It is now worth fully worth £8 per fathom. In driving east on the Pink lode, the lode is 4 feet wide, and better defined, and produces tin throughout, all saving work for stamps. There is no other change to notice since last reported on.—(Signed) Nichs. Vivian.

WHEAL METAL AND FLOW.—During the past four weeks we have completed the incline tramway and set same to work. It is now working very well. Gearing from the winding drum has been fixed in the engine house. We have constructed a dam for storing the water at the top part of the flow. The intermediate level east of Parry's shaft has been extended 2 fathoms 3 feet, and in the drivage the lode has been disordered and intersected by sparry crossings. The end at present is composed of the matrix of a cross-course, the flucan in which shows a little tin. I expect the tin sale on Friday will be about 4½ tons.—(Signed) Stephen P. Curtis.

COLONIAL, INDIAN, AND FOREIGN MINES.

CHIAPAS.—Mine report for the fortnight ending January 15: Providencia Main advanced 11 feet 10 inches, making a total of 381 feet. Showing a little more mineral. Providencia Cross-cut East No. 2 advanced 7 feet 7 inches, making a total of 64 feet 7 inches. Suspended. Santa Fe Drift 5 feet 1 inch, making a total of 21 feet 3 inches. Much improved. Taylor Winze No. 3 advanced 5 feet 2 inches, making a total of 9 feet 2 inches. Showing a little mineral. Taylor Main Drift West advanced 4 feet 10 inches, making a total of 54 feet. Suspended dry season. Santa Fe Winze No. 2 advanced 9 feet 5 inches, making a total of 30 feet 10 inches. In dioritic rock. Note, 30 feet 10 inches is from below level of Taylor Main. Drowned out temporarily; no air to run pump dry season. Taylor No. 3 Stope extracted 451 tons of fair quality. Taylor No. 2 Stope extracted 25 tons of ore. Poor in quality. Santa Fe Drift extracted 32 tons of ore. Improved in quality. Old Providencia extracted 194 tons of ore. Very good stone. Santa Fe Hill Drift extracted 30 tons of ore. Improved, and is now showing paying free milling ore. Air drills and pump suspended for want of water.—(Signed) Edward T. McCarthy, Superintendent.

MOUNT LYELL.—Latest advices to hand from Melbourne confirm cable published on January 5, and contain reports from the mine from which the following particulars are extracted:—December 20, 1893: The engine shaft has been sunk a total depth of 85 feet. No change in the rock, water easy. Expect to commence No. 5 tunnel to morrow. January 4, 1894: Have sunk No. 1 shaft a total depth of 100 feet 6 inches, and the opening out set south will be put in place to-morrow. In No. 2 shaft we have sunk a total depth of 53 feet. No. 5 tunnel has been driven a total of 40 feet, ground easy. The ore raised from the 50 feet level going north is estimated to contain 20,000 ounces of silver. The ore dispatched from the mine contains 10,183 ounces of silver (which is included in the amount cabled as above), the total since January 1, 1894, being 10,183 ounces. The advices also state that very important developments have taken place in the further exploration of the No. 4 tunnel which has revealed the existence of a much larger body of high grade ore than the directors' most sanguine expectations could have warranted.

NEW HERIOT.—January 18: Operations at the mine: The manager says: 137 feet 6 inches of driving, sinking, and crosscutting was done during week January 6.—Battery: The 40 stamps ran 5 days 23 hours 43 minutes and crushed 864 tons, which yielded 1533 ounces clean amalgam and 439 ounces smelted gold. During week we have filled seven vats with an estimated tonnage 602. Theoretical extraction 30·57 per cent.—(Signed) W. H. Hunter.

NEW GUSTON.—The following cable information has been received from the mine:—Output for January month, ore shipped 670 tons, value (estimated) $9240, mine expenses $11,600. The mine superintendent under date January 22 reports, viz.:—No. 5 level south drift winze distance driven north 12 feet from east side of winze. Width of ore in the forebreast 8 feet. Average value of ore 60 ounces silver per ton, gold 1 ounce per ton, copper 8 per cent. We have also driven south 6 feet from south end of winze. Average width of ore in the forebreast 1 foot, value 30 to 45 ounces silver per ton, gold ½ ounce per ton, copper 4 per cent.—No. 6 level: No. 6 Old Orebody stope: Midway drift: About 40 feet over the back of No. 6 level from the south end of the old ore body stope, we have commenced driving a midway drift south. Distance driven 21 feet; width of ore in forebreast 9 inches. Value 10 to 14 ounces silver per ton, gold 1-10th ounce per ton. No. 7 level south drift south west cross drift winze depth sunk 10 feet. From the north east end of winze we have also stoped out a piece of ground 14 feet in length for 10 feet deep. Width of ore met with 2 feet, value 13 to 16 ounces of silver per ton, gold 1-10th ounce per ton. North drift No. 2 stope south raise length of stope 54 feet, height over back of level 76 feet, average width of ore 4 feet, value 12 to 19 ounces silver per ton, gold 1-10th ounce per ton. No. 8 level south drift winze midway west cross drift operations have been suspended for the time. No. 9 level south drift distance driven 13 feet, total distance driven from shaft cross cut 78 feet. Width of ore in the forebreast 12 feet. Average value of ore 18 ounces silver per ton, gold 4-10ths ounce per ton, copper 3 to 8 per cent. At present we have not determined the actual width of the ore, not having seen the east side of it yet. At one point in the drift it has been proved to be 15 feet wide.—South drift stope: On the east side of the drift we have widened out in the ore for the purpose of commencing a stope. Ground excavated—Length 28 feet, width 7 feet, height 8 feet. Average value of ore 18 ounces silver per ton, gold 4-10th ounce per ton, copper 3 to 8 per cent. No. 10 level north drift, distance driven 13 feet, total distance from shaft crosscut 26 feet, width of ore in the forebreast 1 foot 6 inches. Value 7 to 12 ounces silver per ton, gold 2-10th ounces per ton. South drift distance driven 8 feet, total distance driven from shaft crosscut 26 feet, width of ore in the forebreast 10 feet, average value of ore 15 ounces silver per ton, gold 3-10ths ounce per ton, copper 3 to 6 per cent. Main shaft depth sunk 34 feet. Total depth below floor of No. 10 station 78 feet.

SPITZKOP.—Manager's report for week ending January 13:—10 stamper mill worked 69 hours, crushed 100 tons of surface quartz, clean up yielded 94 ounces amalgam. Reef Hill: Stripping, breaking out, and hauling quartz as usual. Hydraulic: Two monitors worked 5½ days (or 69 hours during the week; there appears to be no change; the wash looks fairly well.

INSTITUTION OF MINING AND METALLURGY.—The fourth ordinary meeting of the third session of the Institution of Mining and Metallurgy will be held on Wednesday next in the Lecture Theatre of the Geological Museum, Jermyn-street, S.W., when a paper by Mr. Joseph Garland, on "Nickel Mining in New Caledonia," will be read and discussed.

ANGLO-MEXICAN.—Writing on the 14th January, the manager says, respecting the newly acquired gold mine at San Jose de Gracia: Guadalupe winze No. 7 below Guadalupe tunnel continues to present a very favourable appearance, the pay streak or rather the bonanza streak being fully 2 feet in width. A sample taken from this ore during the week assayed over 35 ounces per ton in gold, and he cabled on the 8th instant as follows: Have shipped 35 tons second class ore, estimated value $25,000.

AUSTRALIAN BROKEN HILL CONSOLS.—The mining manager reports by mail for the fortnight ended the 4th of January: Block 96: Main shaft 280 feet level east prospecting drive driven 5 feet 6 inches, total 135 feet. This drive having evidently reached the eastern extremity of the shoot of ore bearing ground driving has been stopped and men will be transferred to a point within the shoot, where fair grade galena was passed through, and where it is intended to put up a rise.—Incline: No sinking has been done here during the fortnight as pump required repairing and general overhaul. Pump has been lowered and men have been engaged in erecting penthouse over same. No. 4 level east of incline driven 4 feet 6 inches, total 125 feet. No change. No. 3 level east of incline stopes off winze No. 1 driven 6 feet. No change. No. 3 level west of incline stope off winze No. 1 driven 3 feet. A little galena was met with making towards the incline. Work here has been suspended for the present, and men have been transferred to stope a block of ground on the 280 level west between air winch and north west cross cut. Stoping off 280 level west driven 3 feet. Work of stoping just commenced, a little silver iodide showing. 280 level west prospecting drive driven 9 feet, total 81 feet. No change.—Note: The quantity of rock mined during the fortnight was 1097 cubic feet.

BONNIE DUNDEE.—Mine manager's report for fortnight ending December 16: We have had six men driving and stoping east of winze from No. 7 south west level and have driven a further distance of 10 feet, making a total length of 132 feet. The reef is looking well, and is from 1 to 2 feet thick heavily mineralised. Have continued stoping from the back of crosscut from No. 9 south west level on about 10 inches of fair looking stone in a hard formation. Started 2 men stoping from the back of No. 5 south west level. The reef averages a foot in thickness, and, is I think payable. Have sunk the new No. 3 vertical shaft a further depth of 10 feet, making a total depth 322 feet, and have put in 2 frame sets so that we can at any time open out on the formation and reef we have just passed through if required. Have finished building the store room and everything is now complete and in good order. Stone raised during fortnight: 60 tons making total in hopper 140 tons. Shall start crushing next week, and shall put through about 200 tons.

BRILLIANT BLOCK.—Mine manager's report for fortnight ending December 28: Underlie shaft deepened an additional 10 feet by contract, total depth below No. 4 plat 99 feet. Reef in the present bottom is still about 5 feet thick and of fair quality. The top cap to form No. 5 plat has been put in position; we shall have to sink a few feet further for a well hole and then open out the No. 5 levels at once. No. 4 drive west has been extended an additional 21 feet by contract. Total from shaft 298 feet. Showing reef 1 foot thick of low quality. Stoping is being carried on over the drive on a reef about 3 feet thick medium quality.—No. 4 Level East: Footwall drive has been extended an additional 5 feet by the contractors, total from shaft 220 feet. Reef in face is 2 feet thick of good quality. The hanging wall drive from this level extended 15 feet, total length 31 feet. Reef in face of drive 1 foot thick of fair quality. Stoping is being carried on over this drive on a reef 2 feet thick of good quality. No. 3 level east cross cut in hanging wall at his level extended 20 feet, total length 45 feet. We are now through the reef, which is small at this point but of good quality. Stoping is being carried on over the cross cut on about 2 feet of stone of medium quality. We are still stoping in one stope under the No. 2 level east on a reef 4 feet thick of low quality. Quartz hauled to 23rd December 350 tons. Water hauled about same as usual. Quartz crushed at Bonnie Dundee mill 365 tons for 287 ounces 4 dwts. gold. During the Christmas holidays the boiler has been overhauled and cleaned.

BALAGHAT-MYSORE.—Captain Jos. Pryor, January 24: Ogle's shaft has been sunk about 8 feet or 70 feet below the 730 feet levels. We have also started the driving of the new or 800 feet levels north and south, and both are extended 2 feet 6 inches each from the shaft. The lode in these ends as well as in the shaft is small and at present unproductive; we are however expecting at an early date an improvement in the north level. The No. 1 winze in the bottom of the 730 feet level north has been sunk 5 feet 9 inches or 43 feet 6 inches below the level. The quartz has recently become pinched but it will, I am hoping, very soon right itself again and resume its former width. Although it is to-day small, the assay value is still very good, viz., 4 ounces 13 dwts. 8 grains of gold per ton. The stopes in the bottom of the 730 feet level north yield quartz of about 1 foot wide and assay on an average 1 ounce 12 dwts. 10 grains per ton. The stopes in the back of this level produce quartz of 14 inches wide and assay on an average 1 ounce 10 dwts. 22 grains per ton. The stope in the bottom of the 660 feet level yield quartz of about 1 foot wide, and assay on an average 1 ounce 7 dwts. 18 grains per ton. The crosscut west at the 410 feet level north has only been driven 2 feet 3 inches or 28 feet 6 inches from the level. Its further extension is for the present suspended. Haines' shaft, in addition to being timbered, has been sunk 4 feet or 36 feet below the 800 feet level. The ground is still very disordered; the quartz, however, continues 1 foot wide and assays 13 dwts. 1 grain per ton. The 800 feet level south has been communicated with the level north from the bottom of the No. 1 winze at the 730 south and since extended 3 feet 6 inches south beyond this winze, making altogether 34 feet, or a total distance of 120 feet 6 inches from the shaft. The quartz is 1 foot 6 inches wide and assays 8 dwts. 16 grains per ton. We have just started a new or No. 1 winze in the bottom of this level at a distance of 100 feet from the shaft, and have sunk it 3 feet below the level. The quartz is 1 foot wide and worth about 10 dwts. per ton. The stope in the back of the 800 feet level south yields quartz of 2½ feet wide, but assays only 4 dwts. 16 grains per ton. The stopes in the back of this level north of the 730 winze produce quartz of about 15 inches wide and assay on an average 19 dwts. 2 grains per ton. The 800 feet level north driving from the bottom of the No. 1 winze at the 730 feet level south has been advanced 2 feet 6 inches, or 16 feet 6 inches from the winze, and was then communicated with the 800 feet level south of the shaft, with which level it is now included as referred to above. The No. 2 or midway winze in the bottom of the 730 feet level south has been sunk 7 feet 3 inches, or 35 feet below the level. The quartz is now only from 6 inches to 1 foot, and assays 1 ounce 5 dwts. 4 grains per ton. The stopes in the back of the 730 feet level south produce quartz of 15 inches wide, but assay only 3 dwts. 17 grains per ton, and have therefore been suspended. The stopes in the bottom of this level yield quartz of 1 foot wide, but this week, the assay is only 3 dwts. 17 grains per ton. This, however, is I think only a temporary falling off, and their value will very soon again improve—Tennant's Shaft: This shaft has been sunk 10 feet, or 29 feet 3 inches below the 285 feet level. The quartz for the greater part of this distance has averaged nearly 3 feet wide, but since the last blast or two it has been a little disordered by as east and west crossing or small cross course, consequently the quartz to-day is only from 1 foot 6 inches, to 2 feet 6 inches wide; it, however, assays 7 dwts. 14 grains per ton. As far as at present seen this crosscourse is rapidly dipping south, we may, therefore, soon expect to get away from its influence when doubtless the lode will again improve in size. The 285 feet level north has only been driven 3 feet 6 inches, or 38 feet 6 inches from the shaft. The quartz is now somewhat mixed with country rock, and as intimated in my last report we have stopped the driving in this direction until we get the shaft deep enough for starting another level.—Surface: The general work at surface is progressing satisfactorily.

CALIFORNIA MILLING AND MINING.—The directors have received the following from the manager in Colorado, under date January 30: Mill treated 1855½ tons Customs ore and 72 tons from California Mine, total 1927½ tons in 33 days, average 59 tons per day. Returns $4134 38, cost $3517·08, leaving a balance to credit of $617·25.—Mine; The new vein recently discovered, opens up prospects of other discoveries of still greater value in the ground covered by the new claims.

CAPE COPPER.—The rock in the 130 fathom crosscut north of 75 winze has not undergone any change to notice since last report. The 117 fathom level east of 72 winze has been suspended for the time, to enable us to crosscut north and south a few feet back from the extreme forebreast, to thoroughly prove this locality. The stope in the 117 fathom level east of 72 winze is yielding a little saving stuff. The rock in the 105 fathom level south east of No. 11 level is composed chiefly of quartz. Nothing of value having been found in the 92 fathom level east of north east, it is suspended, and the men are put to resume the crosscut south at this depth. The forebreast of the 92 fathom crosscut south of 46 winze still contains spots of copper ore. The drive in the back of the 92 fathom level south east of 42 winze is worth about 8 tons of copper ore per fathom. The ground in the 80 fathom north east of 49 winze is composed of quartz, iron and copper, but the latter not in sufficient quantities to value. The 80 fathom level south east of the new shaft is again poor. The 68 fathom crosscut south of No. 16 level having fallen off in yield, it has been temporarily suspended, and the men are put to cut out the sides of the level to ascertain if the productive ground is making in any other direction, and also with the object of sinking a winze in the most promising part. The stopes in the 92 and upper levels are yielding well. The rock in the bottom of the shaft sinking below the 59 fathom level is spotted with copper ore throughout. The rock in the 53 fathom level south-east of the new shaft being hard and spare for progress and unfavourable for copper ore, it has been suspended. The drive in the 36 fathom level south-east of new shaft is worth 1 ton of copper ore per fathom. The crosscut south of east drive for the present is only yielding stones of copper ore. Nothing of importance having been met in sinking the winze below No. 1 crosscut it has been suspended. Returns for December: Ookiep, 2170 tons of 18 per cent, Spectakel, 110 tons of 29 per cent. Arrivals at Port Nolloth: The *Wanlock* and *Daniel*. Tilt Cove: East Mine: Captain W. R. Toms. Output for Month: 5544 tons of 4 per cent. wet assay.

CRAVEN'S CALEDONIA.—The following cablegram has been received, giving result of crushing for past fortnight, dated Charters Towers:—During the past fortnight No. 9 level has been extended a further distance of 9 feet by three men on wages, which makes a total of 136 feet from the slide. The reef is about 1 foot thick and seems to be of better quality. The reef in the stopes over this level will average about 10 inches. No. 8 level has been extended a further distance of 5 feet by Tomlinson and party, which completes their contract of 50 feet, and makes a total of 266 feet from the slide. The reef in this level is about 10 inches thick and showing more mineral. In the first three stopes over this level the reef is about 8 inches thick, and will average about 10 inches in the other three stopes. No. 7 level has been extended a further distance of 8 feet by two men on wages, which makes a total of 406 feet from the slide. The two leaders mentioned in my last report have come together in this drive, and makes the reef about 6 inches. There is still a little water making in the face. In the first two stopes the reef is a little smaller than it has been, but in the four stopes the reef will average about 10 inches. No. 6 level has been extended a further distance of 9 feet by three men on wages, which makes a total of 281 feet from the slide, and the reef remains about the same as per last report. The haulage of quartz for the past fortnight is 148 tons, making a total of 513 tons for the present crushing.—(Signed) G. Cabassi.

GOLD FIELDS OF MYSORE.—Report on prospecting work dated January 24: Golconda Block, No. 18 Shaft: The drive south of main cross cut 56 feet east of the bottom of this shaft has been extended 4 feet. The lode being very small and poor operations have been suspended. It is probable that the branches of quartz met with in the drivage of the cross cut will unite in depth and form a more regular lode.—West Balaghat Block: No. 1 shaft: The water has been taken out of this, and the shaft cleaned up to bottom. Levels have just been started to drive north and south on the lode. No sample has been taken from this as yet.—No. 2 Shaft: This shaft has been sunk to a depth of 105 feet. The lode in present bottom of shaft is 4 inches wide assaying 12 dwts. of gold per ton. North drive from this shaft has been extended 37 feet. Lode in present end is 1 foot 10 inches wide, assaying 1 ounce 12 dwts. of gold per ton. South drive has been extended 46 feet 6 inches. Lode in present end is 8 inches wide, assaying 2 ounces 5 dwts. of gold per ton.—No. 3 Shaft: This has been sunk to a depth of 95 feet. Lode in bottom of shaft is 2 feet wide, assaying 1 ounce 9 dwts. of gold per ton.—No. 4 Shaft: This is sunk to a depth of 90 feet 3 inches. Lode in bottom of shaft is 1 foot 6 inches wide, assaying 1 ounce 4 dwts. gold per ton.—Road Block: Shaft 300 feet north of No. 1 shaft in this block has been sunk to a depth of 37 feet. Lode in present bottom of shaft is 1 foot 6 inches wide, assaying 8 dwts. 5 grains of gold per ton. From the foregoing it will be seen that this lode which is situated to the east of the Oriental lode worked on in south shaft is improving in value as depth is attained, and I have every belief that when opened up it will be found valuable.

HARRIETVILLE.—Fortnightly report of Mr. T. G. Davey, superintendent, dated 5th January: Mons Meg Mine: Winze on main shoot below tunnel D sunk 6 feet, total 87 feet. We are carrying 6 feet of the lode, but do not know its actual width, as the footwall has not been seen. This will be tested when we open out at 100 feet. The lode has a promising appearance, and "colors" of gold have been seen, but it is very poor at present. Water increasing somewhat, but the pump is working well. Crosscut west of 290 feet level below tunnel J advanced 3 feet, total 13 feet. Ground hard and poor, with occasional "colours" of gold. Rise on north shoot at back of 44 feet level advanced 7 feet, total 31 feet. Lode 3 feet wide assaying 2 dwts. per ton.—Stopes: North stopes over drive south of tunnel D, lode from 16 feet to 19 feet wide from wall to wall, including auriferous veinlets in sandstone on footwall. Assay value from 3 dwts. to 6 dwts. per ton. Lode in stopes at back of 290 feet level 5 feet wide, assaying from 3 dwts. to 5 dwts. per ton. Stopes over 240 feet level. Lode 3 feet wide assaying 5 dwts. per ton. Guerdon Mine: Rise north of tunnel K on Guerdon lode advanced 7 feet, total 122 feet. Lode small and poor.—Swindle Lode: Shallow tunnel extended 4 feet, total 177 feet. Quartz veins with colours of gold.—Tiddledee Mine: We have exhausted the stope on new shoot at the back of tunnel B, and are about to sink on it from same tunnel.—Jackass: Work has also been suspended on vein in old stopes at B, as it has become poor.—Surface: Tunnel under Jackass road advanced 10 feet, total 125 feet. Have struck water here, as well as a number of quartz veins. The latter are of no value, although of encouraging appearance. The men have settled down to their work again after the late holidays. The roasting furnace and pyrites works are again in full swing.

MOUNT ZEEHAN (Tas.).—Manager writes for three days ended December 29: Argent Section: Main engine shaft [No. 6 lode, 72 feet level north, stope in back of level continued. Ore raised 6 tons 5 cwts, firsts of usual quality. Mill being idle no seconds have been raised. Lode is from 2 feet to 8 feet wide, the greater part carrying good milling ore with a nice branch of firsts. No. 4 lode 72 feet level north stope in back of level continued, but ore is being kept below for the present 192 feet level have started a cross cut west and driven 6 feet. Shall continue this until ready to resume milling about January 6. Whip shaft south No. 4 lode has been sunk 2 feet, total 15 feet. No change in character of lode.—Concentrator: No crushing has been done, but mill engine has been kept running for treatment of chats and slimes. Recovered 9 tons 8 cwts. concentrates, containing about 6 tons 8 cwts. lead and 697 ounces of silver.

MYSORE REEFS.—Fortnightly report of Captain M. Scantlebury, mine agent, dated January 24: Underlie Shaft: I cabled you on the 22nd inst. that the quartz in this shaft is very rich, which I now confirm. During the past two weeks this shaft has been sunk 9 feet 6 inches, now 179 feet 6 inches from surface. The lode is 4 feet wide composed of quartz, country rock, and a little arsenical pyrites on the footwall. There is a leader of quartz 1 foot 6 inches wide coming in from the south end of the shaft and against the hanging wall a leader of quartz 9 inches wide, also coming in from the south. It looks as if we are on the top of a shoot of ore. Five days since I broke two samples which have been assayed with the following result:—Sample No. 1 footwall 3 dwts. 22 grains, sample No. 2 hanging wall 11 dwts. 17 grains. Owing to the air compressor boiler giving out and an accident in the shaft we have not been able to have more than one blast since this, but the lode has considerably improved, and from the leader against the hanging wall some really good specimens of gold quartz have been broken. In a few days I expect to be in a position to cable you real good news. I may say that last night I tried a sample from the smalls of the stuff broken in the last blast, which gave 18 dwts. of gold to the ton. Vertical shaft has been sunk 9 feet 6 inches now 171 feet 6 inches from surface. The shaft is almost dry. As soon as we cut water in sufficient quantity to feed the boilers we shall start a cross cut east to intersect the lode. Trial shaft on the western run of old workings has been sunk 1 foot 6 inches, now 30 feet 6 inches from surface. We have only one shift of men here, and we cannot put on any more until we cut water in the other shafts as we want the water here for feed for the boilers.

MYSORE GOLD.—Richard Hancock, January 24: Mining operations for the fortnight ending January 22: Rowse's Shaft has been sunk 6 feet, making a total depth of 105 feet 6 inches below the 1360 feet level. The 1360 feet level north, south of crosscut has been driven 14 feet, making a total distance driven of 92 feet. The lode having become pinched the driving will be continued by hand labour, and the machine has been put to stope in the back of the 620 south of crosscut from north end of rise. The rise in the back of this level has been put up 10 feet 6 inches, making a total height of 18 feet. The lode is 2 feet wide assaying 2 dwts. 14 grains. The 1260 feet level north has been driven 20 feet, making a total distance driven of 639 feet 6 inches. The lode is 4 feet wide assaying 16 dwts, 23 grains. The winze in the bottom of this level has been sunk 12 feet, making a total depth of 61 feet 6 inches. The lode is 4 feet wide assaying 2 ounces. We have a machine engaged cutting out a piece of ground in the back of this level for fixing a winding engine. The 1260 feet level south crosscut west has been driven 2 feet, making a total distance driven of 8 feet 6 inches. The rise in the back of this level has been put up 18 feet 6 inches, making a total height of 236 feet. The lode is 2 feet wide assaying 2 ounces 2 dwts. 10 grains. There are two stopes in the back of this level, the average width of the lode being 3 feet, giving an average assay of 2 ounces 1 dwt. 15 grains. In the 1160 feet level north the rise in the back of this level has been put up 7 feet, making a total height of 98 feet. The lode having become pinched, this working has been suspended and the machine put to drive east from the level at the foot of the rise. We have driven 9 feet and intersected quartz 6 feet wide assaying 5 dwts. 5 grains. There are three stopes in this level, the average width of the lode being 2 feet 10 inches, giving an average assay of 18 dwts. 1 grain. In the 1160 feet level south end has been driven 13 feet, making a total distance driven of 79 feet. In the 1060 feet level north there are six stopes the average width of the lode being 1 foot 1 inch, giving an average assay of 14 dwts. 23 grains. We have also a pare of men engaged stripping down side in the bottom of this level, in which the lode is 2 feet wide. No assay made. The lode in the stope in the back of the 990 feet level north is 1 foot wide assaying 1 ounce 3 dwts. 12 grains. We have also a pare of men engaged stripping down side in the back of this level, in which the lode is 1 foot wide. No assay made. There are two stopes in the 890 feet level north, the average width of the lode being 1 foot 9 inches, giving an average assay of 15 dwts. 16 grains. We have also a pare of men engaged stripping down side in the back of this level, in which the lode is 1 foot wide assaying 1 ounce 3 dwts. 12 grains. The lode in the stope in the back of the 780 feet level north is 2 feet 6 inches wide assaying 8 dwts. 11 grains. The end in the 620 feet level north of cross cut has been driven 17 feet 6 inches making a total distance driven 75 feet 6 inches. The lode is 2 feet 6 inches wide assaying 13 dwts. 1 grain, 620 feet level south of crosscut. This end has been driven 2 feet, making a total distance driven of 57 feet 6 inches. The lode is 1 foot wide assaying 6 dwts. 12 grains. The rise in the back of this level has been put 9 feet 6 inches, making a total height of 53 feet 6 inches. The lode is 2 feet wide assaying 19 dwts. 14 grains. There are 2 stopes in the back of this level, the average width of the lode being 1 foot 6 inchec giving an average assay of 19 dwts. 14 grains. 620 feet level south. The lode in the stope in the back of this level is 2 feet wide assaying 15 dwts. 15 grains. We have also a pare of men engaged cutting a plat at this level. 400 feet level north of crosscut. The rise in the back of this level has been put up 10 feet 6 inches, making a total height of 28 feet. The lode is 5 feet wide assaying 2 dwts. 14 grains.—Taylor's shaft, 400 feet level north: There are 2 stopes in this level, the average width of the lode being 2 feet giving an average assay of 10 dwts. 10 grains.—Gilbert's shaft, 650 feet level north: This end has been driven 20 feet, making a total distance driven of 161 feet, there is nothing here to report. 520 feet level north. There are 3 stopes in this level the average width of the lode being 2 feet 6 inches giving an average assay of 11 dwts. 1 grain. 520 feet level south on the north part of the lode. This end has been suspended, and the machine put to stope in the back of the 360 feet level north and No. 2 stope. 360 feet level north. There are 3 stopes in this level the average width of the lode being 1 foot 10 inches giving an average assay of 12 dwts. 4 grains. In the 290 feet level north there are two stopes in this level the average width of the lode being 1 foot 3 inches, giving an average assay of 17 dwts. 14 grains. In the 290 feet level south there are two stopes in this level the average width of the lode being 2 feet 9 inches, giving an average assay of 7 dwts. 3 grains.—Tennant's Shaft: This shaft has been sunk 4 feet 6 inches, making a total depth of 17 feet 9 inches below the 520 feet level. The lode is 2 feet wide assaying 14 dwts, 8 grains. In the 520 level north the level has been driven 25 feet, making a total distance driven of 218 feet. The lode is 2 feet 6 inches wide assaying 2 ounces 3 dwts. 6 grains. The lode in the rise and stope in the back of this level is 6 feet wide assaying 10 dwts. 10 grains. In the 360 feet north south of cross cut the lode in the stope in the back of this level is 2 feet wide, assaying 9 dwts. 2 grains. In the 290 feet level south south of cross cut the end has been driven 2 feet, making a total distance driven of 45 feet 6 inches. The lode is 8 inches wide of a mixed character. In the 290 feet level south north of cross cut the end has been driven 10 feet, making a total distance driven of 201 feet. The driving of this end has been suspended, and the machine put to rise in the back 80 feet north of the cross cut. The lode in the stope in the back of this level is 1 foot 6 inches wide, assaying 2 ounces.—Schaw's Shaft: In the 450 feet level north the end has been driven 1 foot, making a total distance driven of 1451 feet 3 inches. This is now suspended, and the men put to drive east in the level 140 feet north of the winze to prove the ground in this direction. Driven to date 2 feet. The No. 3 rise in the back of this level has been put up 13 feet 6 inches, making a total height of 20 feet 6 inches. The lode is 9 inches wide assaying 10 dwts. 10 grains. The winze in the bottom of this level has been sunk 2 feet, making a total depth of 52 feet. The lode is 1 foot wide assaying 15 dwts. 15 grains. The lode in the stope in the back of this level is 1 foot 6 inches wide assaying 19 dwts. 14 grains. The 450 feet level north, south of crosscut has been driven 14 feet 6 inches, making a total distance driven of 290 feet. The lode is 2 feet wide assaying 1 ounce 12 dwts. 16 grains. The lode in the stope in the back of this level is 1 foot 6 inches wide assaying 3 dwts. 22 grains. The 320 feet level north has been sunk 3 feet, making a total depth of 130 feet. The lode is 1 foot wide assaying 5 dwts. 5 grains. The 320 feet level north of crosscut driving from rise has been driven 3 feet 3 inches, making a total distance driven of 29 feet 9 inches. The lode having become mixed the driving of this end has been suspended, and the machine put to rise in the back of the 320 feet level north of crosscut 50 feet south of No. 1 rise risen to date 4 feet 6 inches. Lode 9 inches wide assaying 3 dwts. 2 grains. The lode in the stope in the back of this level is 6 inches wide assaying 7 dwts. 19 grains. The 320 feet level south of crosscut has been driven 3 feet, making a total distance driven of 141 feet 6 inches. There is nothing here to report. The lode in the stope in the back of this level is 1 foot 6 inches wide assaying 1 ounce 19 dwts. 4 grains. The 220 feet

level north end has been driven 3 feet 3 inches, making a total distance of 225 feet 3 inches.—McTaggart's shaft, 320 feet level north: This end has been driven 15 feet, making a total distance driven of 89 feet. The lode is 3 inches wide assaying 6 dwts. 12 grains.—Glen shaft 250 feet level north: This end has been driven 10 feet 9 inches, making a total distance driven of 1218 feet. The lode is 6 inches wide assaying 6 dwts. 12 grains. The cross cut east in this level has been driven 2 feet 8 inches, making a total distance driven of 220 feet. Ribblesdale's shaft has been sunk 7 feet 3 inches making a total depth of 183 feet. The 1060 cross cut west has been driven 24 feet, making a total distance driven of 287 feet 6 inches. The cross cut east from the Eastern Prospect shaft has been driven 23 feet, making a total distance driven of 36 feet.—William's Shaft: On the 15th inst. we started to drive by hand labour a cross cut east from the shaft at the 173 feet level with a view of further prospecting the run of old workings east of the Champion lode. The health of the camp is very good.

NO 7 NORTH EAST QUEEN.—The following fortnightly report has been received from the mine, dated Charters Towers: Since my last report T. Hall and party under the No. 1 western level crushed 14½ tons for 17½ ounces of gold. Johns and party under the No. 1 east crushed 20 tons for 7 ounces 3 dwts. of gold. This block has since been re-let to Milton and party. Messrs. Toy and party over No. 5 level east crushed 19 tons 15 cwts. for 9 ounces 18 dwts. of gold. Heath and party over No. 6 level crushed 8 tons for 2 ounces of gold. The same party have taken another block under No. 3 western level. Goninon and party have crushed from under the No. 6 eastern level 22 tons for 6 ounces 11 dwts. Total amount of stone raised by the tributors about 65 tons.—(Signed) H. Davis.

NINE REEFS.—Fortnightly report of Captain John Woolcock, mine agent, dated January 24: Vyvyan's shaft: I am pleased to say we continue to make fairly good progress in the sinking of this shaft which has been further deepened 6 feet 9 inches, total distance below the 380 feet level 17 feet 10 inches. The character of the lode matter and nature of the ground has undergone no change worthy of notice since last reported. The ground is hard and the lode is composed principally of a short jointed schist with carbonate of lime and a little pyrites intermixed and occasional veins or small patches of quartz but of no value. I was hopeful when last reported the lode would soon improve as the hanging-wall had the appearance of getting more defined, but it is again broken and the lode is unchanged, but every blast is opening up new ground and no one can say how soon an improvement may suddenly manifest itself. There has been nothing done in the 380 feet level during the past fortnight, but the driving will be resumed in a day or two. There is about 60 feet to drive to get under the winze sinking in bottom of the 300 feet level. The 300 feet level south has been driven 11 feet 3 inches, total distance from shaft 198 feet 5 inches. The last 6 feet of this drivage the lode has been disordered and produced but little quartz. It is at present of the same character as we have had for a long distance in the 220 feet level and I have suspended the driving and shall put these men to drive the 380 and communicate with the winze before mentioned which will well ventilate the bottom of the mine. The winze in the bottom of the 300 at 100 feet south of shaft has been sunk 6 feet 10 inches, total depth below the level 13 feet 7 inches. The quartz leader has been from 5 inches to 6 inches wide and a sample broken from here yesterday gave by assay 2 dwts. 8 grains of gold per ton. The 220 feet level south has been driven 13 feet 3 inches, total distance from shaft 399 feet 11 inches. There is no change to report on the nature or value of the lode, which is still unproductive.—Bennett's shaft: The crosscut west at the 145 level to the north of this shaft has been further advanced 10 feet 8 inches, total distance from level 122 feet 8 inches. There is more water coming from the end which shows that we are getting into a porous strata of ground, and it is also more stratified, which I look upon as a good indication, and hope it may lead to something good. South shaft has been further deepened 9 feet 1 inch total depth from surface 70 feet 11 inches. We cut the hitches and put in the bearers on Saturday, and the men are now engaged with our pitman putting in the 7 inch sets. The ground is somewhat harder and letting out a little water, but not sufficient so far to interfere with our working. We are taking our machinery for the working of this on the ground. The removing of the tubes from the old boiler is rather a tedious job being filled between with a hard incrustation of lime which is difficult to remove, but I hope to have it finished by the end of this week when the retubing will be commenced. All our surface work with machinery, pitwork, &c., are going on with great regularity, and do not call for comment.—Health: I am pleased to say the health of the camp is very good indeed.

OURO PRETO.—Passagem mine report dated January 19: Incline shaft No. 1 was not sunk as the men are still engaged opening up the 470 level and fixing tip shoot over shaft. 470 metre level was advanced 2·20 metres on the north east, and 2·10 metres on the south west side. The ground at present is mostly schist with a branch of pyritic ore against the roof. Incline shaft No. 2 was sunk 1·40 metres full size in a strong body of low grade quartz. 315 end north east was driven 5·80 metres. Quartz has risen from the floor, and stands full height of the end. This ore is apparently the Buraco Secco shoot, and assays show it to be of more than average yield. 365 end north east was driven 4·20 metres, and continues full size in quartz carrying spots and strings of magnetic pyrites. Crosscut No. 2 at 365 north east was driven 5·10 metres in hard quartzite, though occasional lines of quartz are now appearing. End from No. 1 crosscut at 365 is being driven to communicate to No. 2 crosscut and provide ventilation for stoping. It was driven 3·40 metres and carries a branch of pyritic and tourmaline ore. 400 end north east was driven 6·90 metres in hard quartz without ore. 435 end north east, the lode has been stripped to the hanging wall, against which the end will now advance. The lode exposed is of a strong massive nature carrying a fair amount of pyrites and without any admixture of sterile rock. Crosscut at 435 north east has been started to drive over shaft for tip shoot. It was advanced 1·80 metres in itabirite, which at this point is extremely hard and compact. 435 end south west was driven 1·60 metres in mixed schist and quartzite without ore. Rise at 435 south west was advanced 4·40 metres, chiefly in schist with only a small branch of ore against hanging wall. 365 end south west was driven 5 metres. Lines of pyritic and tourmaline ore of the same sort as that found at 315 south west are beginning to appear, and the end probably getting into the same run of ore ground. Crosscut at 365 under No. 1 shaft was driven 2·80 metres. It has passed through the ore branch last reported, and is now in hard schist. End over 365 was driven 6·20 metres. It has communicated to rise 24 and is being continued north east from same. The ore branch in the end is about 1 metre thick, but as seen in higher stopes, this opens out over the level. 315 end south west was driven 4·50 metres in mixed lode of schist and quartz, yielding little ore. Rise at 315 south west was advanced 3·80 metres chiefly in schist and carries only a branch of pyritic ore too small to yield any saving work. 175 end south west driving was resumed at the adit level, and the end advanced 2·50 metres, but it continues in schist without ore.—Stoping: In the north east section the stope under the 215 level is still being worked, as the ore is holding forward farther than expected. At the 315 north east the stope in cross cut has become exhausted, the ore being cut out by quartzite. Farther in the level a trial was made on a bunch of ore, but this also has given out. At the 365 north east the lode in the stope from cross cut is not so thick as formerly, but still carries nearly 3 metres thickness of quartz, which is holding up over intermediate level. In the south west section a good deal of ground was broken at the 235 and 265 stopes, but the lode though of great height carries a large amount of schist and quartzite. Along the floor of these stopes some rich pyritic ore has been met with, and a level cut will be brought in from the 265 stopes to open it for stoping. Under the 315 level the stoping front has become low as the hanging wall has bent over, and to avoid leaving ore underfoot the stope is suspended and a new stope started to reach this ore from the level over 365 south west. At the 400 level the lode in the north east stopes show little change, being still over 4 metres thick and yielding a large amount of fair average ore. At the 435 north east scarcely any stoping was done last month so as not to interfere with exploratory work.

PALMAREJO.—Return for January: Mill started 8th January, worked 1150 tons producing $35,000, expenses for the month $30,000. Letter dated 10th January states that owing to the Christmas festivities, a sufficient force of men could not be obtained between the 24th December and the 8th January, and the opportunity was taken to overhaul the machinery. The letter further states that the mine is looking well, and turning out more ore than we can crush, and of our regular value. The ore bin at mill is full of ore, and from 4000 to 5000 tons broken in the mine.

QUEEN CROSS REEF.—Copy of manager's report for fortnight ending December 26: Since my last report stoping has been continued over the No. 5 level on from 1 foot to 18 inches of stone. We have hauled 40 tons for the fortnight, making a total of 127 tons in the paddock. Davies and party, the contractors for sinking the vertical shaft have sunk 7 feet 6 inches, total distance from the surface 694 feet 6 inches. The ground is hard and not good to break. We are 92 feet 6 inches below the timber, and are ready to start timbering after the holidays.

SANTA BARBARA.—The directors of the Santa Barbara Gold Mining Company (Limited) are in receipt of advices from Mr. T. S Treloar, dated Pari, 4th and 18th January: The mineral delivered at the spalling floors from the mine during the month of December amounted to 731 tons, of which 149 tons were rejected as refuse stone and 582 tons treated at the stamping mills. The total produce obtained was 1843 oitavas of amalgamated gold, or equal to 3 166 oitavas per ton stamped. This produce of 1843 oitavas of gold, valued at 8s. 6d. per oitava, amounts to £783 5s. 6d. sterling, and the estimated cost for the month, at exchange 10½d., being £966 16s. 2d., leaves an estimated loss of £183 10s. 8d. for the month of December. (It is estimated that a gain of about £210 accrued during December under the item of difference in exchange, this would leave an estimated profit of about £27 for the month.) The mine captain reports as follows for December:—No. 8 stope south: This stope has been extended 1 fathom 5 feet 7 inches. The lode has averaged about 7 feet wide, but 3 feet only of this was productive the remainder having been sandstone and hornblende. About the middle of the month the lode improved from the centre to the bottom of the stope showing a line of solid arsenical pyrites about 18 inches wide. No. 9 stope south has been extended 1 fathom 3 feet. The lode has maintained its size throughout the month but at times it has yielded a little more sandstone, with this exception there has been no change to note. The stone from same has been of fair quality. No. 9 winze has been sunk 4 feet. The lode averaged about 5 feet wide of low quality. No. 9 end south has been extended 2 feet 6 inches in a small poor lode. The north end of the shaft has been stoped away 2 feet in length for 12 feet in height, the lode averaging 9 feet wide of fair quality.—Timberwork: The timbermen have been engaged cutting hitches and headings for the logs as required, changing sockets in wire ropes, pumping water from tanks and Holland's shaft and sending up water from the incline shaft, about 90 gallons per day in barrels on the skip. Eight logs have been put in the No. 8 stope to keep up shales of ground; two logs put in No. 8 stull and lathed with candeia poles and loaded with unproductive stone; one log put in the No. 9 stull and lathed with candeia poles and loaded with unproductive stone to carry tramroad in bottom of No. 8 level, 21 feet of side runners renewed on the incline, seven sockets cut out and refixed in wire ropes where required: five pulleys under wire ropes, three rolls under flat rods, and one set of brackets renewed and 40 feet run of rail iron relaid on the skip road. The output of stone from the mine is 1115 wagon loads, of which 700 came from the No. 8 stope. 346 from the No. 9 stope, and 69 from the shaft, &c. The number of wagon loads per man drilling is 25·57, and the total number of holes drilled in the mine 1746, of which 870 were in the No. 8 stope, 479 in the No. 9 stope, 70 in the No. 9 end, 193 in the No. 9 winze, and 134 in the shaft.

SOUTH-EAST MYSORE.—Fortnightly report of Captain M. Scantlebury, mine agent, dated January 24: Beresford's Shaft: This shaft has been sunk by hand labour 8 feet 3 inches, now 42 feet 3 inches on the underlie of the lode, and 140 feet from surface. The lode is fully 5 feet wide, but the productive part which is composed of dark blue quartz is 1 foot 9 inches wide against the hanging wall. I have taken four samples:—No. 1 sample, 12 dwts. 6 grains; No. 2 sample, 1 ounce; No. 3 sample, 15 dwts. 12 grains.; No. 4 sample, 1 ounce 6 dwts. 8 grains. This I think is satisfactory at so shallow a depth, and plainly shows that we are opening up a good piece of ground.—Piggott's Shaft: This shaft has been sunk by hand labour 7 feet, now 124 feet 6 inches from surface. The rock is very hard, but I am hoping as we get nearer the lode it will change for the better.

TRANSVAAL GOLD EXPLORATION AND LAND.—The following particulars are from general manager's advices, dated January 17: Ore extracted at all places during week 331 tons, of which 46 tons from Theta assayed 6 ounces 6 dwts. per ton.—Theta Mine: Total drivage for week 66 feet, of which 44 feet was in ore averaging 24½ inch thick. Beta Mine drivage for week 61 feet, on ore averaging 9 inches thick.—Nu Workings: Removal of overburden was being continued; 22 tons were extracted of good quality. Kameel's Creek, ore extracted during week 89 tons, total drivage for week 56 feet. Prospecting Brown's Hill: Total drivage for week 93 feet; the thickness of the deposit varied from 3 inches to 12 inches.—Summary for December: Mined at Beta 235 tons, Theta 640 tons, Nu 112 tons, Kameel's Creek (Chi, north and south), 334 tons, Brown's Hill (Psi) 37 tons, total 1358 tons. Average assay 4 ounces per ton. Produce from battery 214 ounces, pans 896 ounces, cyanide process 893 ounces, total for month 2003 ounces.

UNITED GOLD FIELDS OF MANICA.—Report from mining manager, dated Umtali, 16th December, 1893: Adit No. 1 driven 7 feet 6 inches. Still in very hard drilling and tough blasting schist. No appearance of a change at present. No timber used. Total length driven to date, 430 feet 6 inches. Adit No. 2 driven 14 feet in hard tough schist, and not breaking so well. No timber used. Total length driven, 472 feet.

VICTORIA AND QUEEN GOLD.—Copy of the manager's report for the fortnight ending December 27: I beg to submit the following report of work done in your mine during the past fortnight. We have put in two opening sets in the front and back of the shaft, and have also got the first set of round timber in the underlie. The underlie shaft is down 25 feet from the plat, and there is about a foot of white stone in the face at present, which looks inferior stone to what we have had before. The stopes are looking about the same as last reporting on, averaging from about 5 to 10 inches of about the same quality. During the fortnight we have hauled about 42 tons, and have crushed 43 tons 14 cwts., which gave a yield of 155 ounces 12 dwts., and have about 30 tons in the paddock at present. The machinery is in good working order.

VICTORY (CHARTERS TOWERS).—Copy of mining manager's report for fortnight ended December 30, 1893: No. 1 shaft: Blind shaft in No. 7 stopes sunk 7 feet, total 49 feet. Started to follow the vein of stone mentioned in last report. Drive below these stopes driven 5 feet, total 134 feet, shows 6 inches of medium quality in face. Stopes above 3 to 10 inches, quality not so good as previously. Stopes over No. 11 south level average 12 inches poor quality. No. 12 south level driven 16 feet, total 76 feet, carries 14 inches stone quality medium. Stopes north side shaft 12 inches poor quality. In the stopes on Papuan reef the stone is small but of good quality. Raised 55 tons.—No. 2 shaft: No. 1 A west level driven 5 feet without change, total 33 feet. No. 1 west level at beginning of this fortnight the men working here were shifted back about 92 feet to pick and follow footwall. Since then driven 12 feet on 2 to 12 inches fair stone. No. 2 west level winze in this drive sunk 14 feet, total 64 feet, at this point holed through to No. 3 rise. Started stoping at back of drive above winze on 2 feet fair quality, also underhand stoping at this level on east side of shaft on 20 inches fair stone. In rise and stopes in No. 3 east level the reef averages 15 inches medium quality. Stopes in No. 4 east level average 20 inches, quality medium. No. 4 east level driven 18 feet, total 406 feet, carries few inches stone in face. Eastern underlay sunk 12 feet, total 106 feet, carries 12 inches poor stone. Started another level at a distance of 70 feet from turn, now in 12 feet on 18 inches of fair stone. This level will be known as No. 5 east. Intend to start stope off this level next week. Raised 155 tons.

NORTH OF ENGLAND INSTITUTE OF MINING AND MECHANICAL ENGINEERS.

MEETING AT NEWCASTLE.

THE general meeting of the North of England Institute of Mining and Mechanical Engineers was held on Saturday at Newcastle, when papers were submitted, of which the following are abstracts:—

Contributions to our Knowledge of Coal-dust.—Part II.

The author, Dr. P. PHILLIPS BEDSON, in this paper, gave an account of experiments made with samples of dust collected on the Ryhope screens, the general outcome of which was to confirm the results of his previous investigations, which formed the subject of a paper read before this Institute some five years ago. The Ryhope coal dust yields, when heated *in vacuo* at temperatures from 30 degs. to 100 degs. C., gases consisting of carbon dioxide, nitrogen, oxygen, and combustible gases, which latter consist of paraffin and olefine hydrocarbons. The paraffin hydrocarbons are undoubtedly mixtures of marsh gas and some of the higher members of the same series. An account is also given of the results of an investigation of the gases enclosed by samples of coal dust taken from the coal-box or hopper, shortly after the accident which occurred in April, 1889, at Messrs. Straker and Love's colliery at Brancepeth. These dusts are entirely different in character from the Ryhope dust, one, viz., that collected from the timbers at the top of the box, yielding no combustible gas, but only carbon dioxide, oxygen, and nitrogen, whereas the second sample taken from the dust accumulated in the box gave a small proportion of combustible gas.

Contributions to our Knowledge of Coal-dust.—Part III.

This paper, which was contributed by Dr. P. PHILLIPS BEDSON and W. MCCONNELL, jun., contained an account of the results of the examination for "enclosed gases" of several varieties of coal and coal-dust obtained from different collieries in the counties of Northumberland and Durham. The coal or coal-dusts examined represent, firstly, the coal of the Hutton seam (Durham) and low main seam (Northumberland), secondly, the yard seam, and, thirdly, the Bensham seam (Northumberland). The coal of the Hutton seam gives gases rich in combustible constituents, and while the coal itself when heated at 100 degrees Cent. *in vacuo* yields marsh gas, the coal after this exhaustion, on crushing and reheating under the above conditions, gives a further quantity of "enclosed gases," of which the combustible constituents consist of marsh gas and higher members of the paraffin series of hydrocarbons. The coal of the yard seam gives mixtures of carbon dioxide, oxygen, and nitrogen only, whereas that from the Bensham seam gives gases resembling somewhat those obtained from the coal of the Hutton seam. The existence of the denser paraffin hydrocarbons among the gases enclosed in coal-dust shows that in considering the part played by coal-dust in forming explosive mixtures with air, we may have to deal with a variety of dust which might readily yield such hydrocarbons. These gases differ from marsh gas not only in the proportion required to form an explosive mixture with air; thus, whilst 1 volume of marsh gas would require 10 volumes of air for its complete combustion, 1 volume of the hydrocarbons found in the Ryhope coal-dust would require 23 volumes of air; or, in other words, whilst 9·3 per cent. of marsh gas is required to form the most explosive mixture with air, about 4 per cent. only of the combustible gas obtained from the Ryhope coal-dust would be required. But the difference between marsh gas and its next homologues is seen again in the temperature required to ignite such explosive mixtures, for it has recently been shown by Mr. Victor Meyer that the temperature of ignition of explosive mixtures of oxygen and ethane is lower than that of marsh gas and oxygen. These facts point to the ready inflammability and the sensitiveness of dusts containing such hydrocarbons—a conclusion borne out by the ignition of the coal-dust on the screens at the Ryhope Colliery—a fact which led originally to the investigation of this subject; and, further, the Austrian Fire-Damp Commission has from the experiments with coal-dust been led to the conclusion that the sensitiveness of dusts increases with the proportion of easily inflammable hydrocarbon gases, especially with the amount of ethane liberated at 100 degrees Cent. and with the dryness of the dust. There are doubtless other factors which contribute to the ready inflammability and sensitiveness of a coal-dust, and one can easily understand how this would be contributed to by the fineness of subdivision, and again by the air which the coal may absorb by long continued exposure in an air-current.

The Combustion of Oxygen and Coal-Dust in Mines.

The writer, Mr. W. C. Blackett, recommended the perusal of "Accidents in Coal Mines," by the Messrs. J. B. and W. N. Atkinson, the final report of the commission appointed to enquire into accidents in mines, and the first report of the Coal-Dust Commission of 1891 by all those wishful of pursuing the study of this subject. He specially speaks of combustion rather than explosion, as he finds the use of this latter term by a great number of people produces quite a different train of thought to that of the idea of explosion. The writer considers that until there is a perfect understanding of the relations to each other of detonators, explosives, gases, dusts, &c.—their chemical and other properties—we cannot expect to understand as we ought explosions in mines. The writer examined the state of the workings at Seaham, Tudhoe, Trimdon Grange, and Usworth after the explosions at these collieries, and from the facts there observed formed a theory of the action of dust and air, which he gives in his paper. He describes the effects of any local fire-damp explosion, gunpowder, shot, &c., which stirs up a thick cloud of dust which can be immediately ignited by any accompanying flame; and then sketches minutely its subsequent effects under varied conditions. He is of opinion that none of the high explosives, such as roburite and ammonite, will fire coal-dust, but that only such slow explosives as gunpowder, which are in sympathy with dust ignition, will do so.

THE NATAL AND TRANSVAAL RAILWAY.—The Natal Transvaal Railway Convention has been signed. It provides that the Transvaal Government shall construct the works of the line from Volksrust, and that the maximum through rate from Durban to Johannesburg and Pretoria shall be on ordinary goods 6d., and on rough goods 3d. per ton per mile, the minimum rate being fixed at 3d. and 3½d. respectively. In no case is the rate to go below that of the Delagoa Bay Railway. Provision is made for equalising the traffic on the Natal and Delagoa Bay routes. Natal is forbidden by the Convention to extend the Harrismith line to any point north of Kronstadt. The line is to be opened throughout in July, 1895, if possible, and in December of that year at the latest. The sections will be opened as they are completed.

GEOLOGY OF THE WEST YORKSHIRE COAL FIELD.

Paper by Mr. ARNOLD LUPTON.

MR. ARNOLD LUPTON, whose name is so familiar in mining circles, contributed recently a most interesting paper, entitled, "The Geology of the West Yorkshire Coal Field," to a meeting of the Federated Institution of Mining Engineers. It may be stated, said the author, at the outset, that any description of the geology of the West Yorkshire coal field is somewhat like a magazine story "To be continued in our next." It is impossible to attempt anything like a complete account of the geology of this district, even in outline, it will have to be completed some time in the next century when the eastern boundary of the coal field has been explored. In this respect the Yorkshire coal field differs from some others in this country, of which the boundaries have been completely traced. The Irish coal fields are all fully explored, the boundaries of the Scotch coal fields are known except where they dip under the sea; the boundaries of the coal fields of Durham and Northumberland are only unknown where they dip under the sea and on the south eastern corner. The explorations, however, that have been made on this side are not such as to give much encouragement to further exploration. The great coal-field of Glamorganshire has its boundaries accurately traced, and in Monmouthshire and the Forest of Dean the same remark applies. The more centrally placed coal fields, however, of Gloucestershire, Staffordshire, Warwickshire, Leicestershire, Cheshire, Denbighshire and South-west Lancashire, are each unexplored on one side at least, whilst the newly-discovered coal field at Dover stands unique in being as yet unseen by the eye of man and without one single boundary known. It is by no means a risky prophecy to say that when the next century opens, it will give to its generations ample work in the exploration of those hidden coal fields which lie beneath the newer foundations. But of all the hidden storehouses of fuel, there is none more likely to give a rich return to the adventurer than that great coal field which stretches from the latitude of Leeds on the north to that of Nottingham on the south. The writer of this paper had occasion to make a thorough geological examination of this coal field at a period when the geological maps of the northern part, that is, of Yorkshire, were unpublished, an some of the coal seams were traced throughout the whole length of the field. The plans and sections he then made are locked up in the archives of some Government department, and it is not likely that they will ever see the light. It will be observed that the two transverse sections in the plan—those running from east to west of North Derbyshire and from east to west along a line of latitude about two miles south of Leeds—agree in showing a continuous dip from west to east, and in showing the eastern coal field covered up by magnesian limestone and new red sandstone over that. The western side of the coal field is like the edge of a basin. Has the eastern side a similar form, and where is the edge of the basin? It will be admitted that the coal-field comes to an end somewhere, since it does not exist on the other side of the German Ocean. But the question is how and where does the coal field end. Do the coal seams simply thin out, or do they rise up and crop out under the new red sandstone, or has there been some great fault, throwing them up, which is now concealed by the newer formations? The argument of analogy would lead one to suppose that the eastern boundary would be similar to the western boundary, only at a lower level due to the lowering of the earth's crust in an easterly direction. The geologists examined by the Royal Coal Commission thought it probable that the boundary of the coal field would be found somewhere near the longitude along which the river Trent flows northwards from Newark. Other people of a pessimistic turn of mind have thought there would be no workable coal so far east as that; whilst others of a sanguine temperament have said the coal field would underlie the whole of Lincolnshire and some portion of the North Sea. It remains for the borer and pit sinker to establish the true facts of the case. The writer has for many years past frequently committed himself in Parliamentary Committees to the statement that a valuable coal field extended at least as far eastward as the Trent. The limit of this eastwardly extension is evidently fixed by two main factors; the first is the dip of the coal measures, and the second is the inclination of the old carboniferous land surface forming the base of the overlying and unconformable rocks of the Permian and New Red formations. In Somersetshire, the Lias lies directly upon the coal measures, and it is quite possible that over some possible easterly extension of the Yorkshire coal field, the Permian formation, or part of it, and some part of the Trias might be missing, the upper Trias, Lias, and Oolite covering perchance an ancient hill of the Carboniferous formation. If, however, the newer formations continue in their full thickness in an eastwardly direction, it then follows that the depth to the surface of the Carboniferous formation below the present surface must be measured by their full thickness. What this is at any given spot can only be tested as before said by boring. The boring at Scarle, in Lincolnshire, which is about 9½ miles south west of Lincoln (beside the Nottingham and Lincoln Railway), and 2 miles east of the River Trent, near to the village of North Collingham, gives some criterion as to the possible thicknesses of the New Red Sandstone and Permian formations in this part of the country. The section proved was:—Drift, 10 feet; Lower Lias, 65 feet; New Red Sandstone, 1425 feet; Permian, 400 feet; total, 1900 feet, to strata believed to be Carboniferous strata. As the formations bored through are unconformable with each other, it does not follow that this boring has revealed their maximum thickness in Lincolnshire, and it is possible that further eastward the New Red Sandstone and Permian rocks may each attain a greater thickness. More recently a boring has been put down near Carlton, near Snaith, on the river Aire. Another important boring has been made between these places near the river Trent. The existence and extent of a Lincolnshire coal field is a matter of great importance to our descendants; no matter how deep the coal may be they are certain to mine it. Of course a deep mine is in some respects more expensive to work than a shallow mine, but when the shallow mines become exhausted and the price of coal goes up, the deep mines will then be worked, even though their depth should reach 10,000 feet. One of the most striking features of the proved portion of the coal field is the regularity of the dip from west to east. Referring to the east and west sections near Leeds, the western outcrop, near Halifax, is above 500 feet above sea-level, and the probable depth of the Halifax coal at Allerton Bywater colliery is about 2500 feet below sea level, or a dip of about 3000 feet in 20 miles, which is at the rate of 150 feet per mile. On the same line of section, Robin Hood colliery is about 7 miles west of Allerton Bywater colliery, and the dip of the measures from Robin Hood to Allerton Bywater colliery is about 1150 feet, or about 164 feet to the mile. The section does not *prima facie* indicate this remarkable irregularity; this is partly due to the exaggerated scale, the vertical scale being nearly 20 times the horizontal, and therefore the differences of dip are magnified 20-fold. It is also, however, due to the circumstance that the dip does not always take place along a regular slope, but commonly in steps connected by levels. It would appear, however, that these steps or faults do not interfere with the general dip, but are merely accidents connected with the rise or depression of the strata. At the Frystone colliery an easterly rise has been observed, but it remains to be proved whether or no that is a mere local variation, or the beginning of a general easterly rise. The dip at Allerton Bywater is not simply from west to east; there is also a southerly dip. At the Newton colliery, a little east of Allerton Bywater, the Warren House coal seam was about 500 feet below sea level. At the South Kirkby colliery, it is about 1800 feet below sea level, there being a dip of 1300 feet, and the distance from north to south being about 10 miles, or a dip to the south of 130 feet to the mile. From South Kirkby, going straight south, the measures rise in a southerly direction. It would seem, therefore, that the centre of the trough or coal-basin runs in a line from north-west to south-east, starting at the north-western outcrop of the coal measures, say at Denholm, about half-way between Halifax and Keighley, and proceeding south-west through Cleckheaton, Batley Carr, Sandal Castle (about 2 miles south of Wakefield), South Kirkby and Doncaster. If this line was continued it would pass through Gainsborough to a point about 7 miles north of Lincoln, and further east to a point 3 or 4 miles south of Horncastle. From the outcrop of the Halifax beds at Denholme to South Kirkby is about 29 miles, and to Doncaster about 37 miles. Supposing the Halifax beds to exist at South Kirkby Colliery, they will be about 4000 feet deep below the sea-level; their outcrop at Denholme is about 900 feet above the sea-level. There is, therefore, a total dip of about 4900 feet in a length of 29 miles, which is at the rate of 169 feet per mile. If this dip is continued for 8 miles further to Doncaster it would give an increased depth of 1352 feet, or a total depth of about 5352 feet below the sea to the level of the Halifax beds, or say a depth of 1 mile below sea-level, Doncaster being about 50 feet above the sea-level. According to the same system of calculation, the Barnsley bed would be about 3180 feet below sea-level, but, of course, all calculations of this kind are little better than guesses. One of the most interesting matters for speculation on this question is the level of the old land-surface of the coal-measures. Will it continue dipping under the Permian rocks at the same inclination that it now has from Denholme to South Kirkby? This inclination is about 800 feet in 29 miles, which is at the rate of 27 feet per mile. This is not probable, because the surface of the exposed coal-measures has been subjected to great denudation since the time of the deposit of the Permian formation. The next question is: Will the slope be such that the coal measures would have had if the whole series had remained intact all the way to Denholme, and the surface in that case would be 5000 feet above the sea level? Taking such a slope, the inclination will be about 5000 feet in 29 miles, or 172 feet to the mile. It is perhaps hardly likely that the slope of the old land surface would continue at this rate. There can be little doubt that the lowering of the ancient coal field on the eastern side was contemporaneous with an elevation of the strata on the western side where the millstone grit and mountain limestone now come to the surface, and it is highly probable that the greatest force was exercised along the line of the Pennine chain, and that in an eastward direction the strata will be found to become more level until they come within the influence of some more easterly line of upheaval not yet discovered. That being so, we are compelled to fall back upon the information obtained by the borings previously referred to. At Scarle the combined thickness of the New Red and Permian formations is supposed to be 1825 feet. The longitude of Scarle cuts the north-west section line previously referred to, as the axis of greatest depression, about a mile to the east of Gainsborough; and therefore in the absence of any better information it would be reasonable to conclude that at this spot the depth to the top of the carboniferous formation would be about 1800 feet. This place is 18 miles south-east of Doncaster and 24 miles south-east of the outcrop of the magnesian limestone and 26 miles distant from South Kirkby. Assuming, then, that the surface of the carboniferous strata has a fall of 1825 feet in 24 miles or an average inclination of 76 feet per mile, but the dip of the carboniferous strata from their outcrop to South Kirkby is more than double this, being 169 feet per mile. Therefore if the depth of the carboniferous strata should be only 1825 feet, 1 mile east of Gainsborough, it follows either that there is a great additional thickness of coal-measures, or else that the eastwardly dip has become much more gradual. Perhaps the most probable supposition is that the south-easterly dip continues for some miles south-east of the South Kirkby colliery. This would be in accordance with the depth of the Barnsley coal at Cadeby colliery, 2250 feet. The longitude of Cadeby crosses the section line about four miles south-east of South Kirkby colliery. To reach the depth of Cadeby colliery an average dip of 90 feet per mile is required from South Kirkby, and if this dip is continued to Doncaster, the depth to the Barnsley bed under that town would be about 1900 + 720, or 2620 feet. It is not probable that the depth will be less than this, and it is not improbable that the south-easterly dip of 169 feet per mile will be continued, at least as far as Doncaster, in which case the depth to the Barnsley coal at Doncaster would be over 3000 feet as before suggested. In considering what coals to take account of in estimating the mineral wealth, it is interesting to refer to the westerly side of the coal field, where almost every seam of coal above 12 inches in thickness is being worked in some place, and some coals are worked of even a less thickness to supply the immediate neighbourhood, in competition with coal-seams varying from 6 to 8 feet in thickness at a distance of only five or six miles, and there is no reason to doubt that long before the British coal-fields are exhausted, seams of coal as thin as 4 inches in thickness will be worked. The writer is acquainted with a mine where a seam of shale 4 inches in thickness is worked, at a cost of about 14s. a ton. It is probable, however, that if an average price of 20s. at the pit could be got for every ton of coal, whether in lumps or slack, that a seam of coal no thicker than 4 inches could be profitably raised. The present cost of mining an 18-inch coal-seam is commonly between 7s. and 8s. a ton exclusive of royalty, but the writer has experience of cases where the cost is very much less. Of course, the cost of mining does not increase in inverse ratio to the thickness of the seam, because many items of cost are not much affected by the thickness of the coal worked, and it must be borne in mind that in working thin coals at some future date, the shafts originally sunk for thicker seams will be utilised.

INSTITUTION OF CIVIL ENGINEERS.—At the meeting on Tuesday last, under the presidency of Mr. Alfred Giles, the paper read was on "The Transport of Petroleum in Bulk," from the point of view of minimising the risks of fire and explosion, by Mr. Boverton Redwood, F.R.S.E., Assoc.-Inst. C.E.

STARTLING NEWS is daily coming to hand of sad accidents, murders, and minor criminal offences, but it is astonishing that thousands of people die in our midst every week, and no notice is taken of the fact. Yet such a terrible calamity could be prevented if more stringent attention was paid to the laws of health. If people would only deal seriously with slight ailments they would not develop into fatal diseases. There are thousands of persons killed yearly simply through neglect. Holloway's pills and ointment can prevent as well as cure disease, and if they were used according to directions there would soon be a decrease in the death rate. They can be obtained from all chemists and medicine vendors.

MR. PICKARD, M.P., AND THE MINERS.—Mr. Pickard, M.P., President of the Miners' Federation, in a statement made on Saturday night, alluded to the formation of the Board of Conciliation in the Coal Trade. Much had been said recently, remarked Mr. Pickard, with regard to the living wage, and as to whether prices of coal could be so arranged as to secure that object. The miners connected with the Federation considered a living wage to be the 1888 rates of wages, plus 40 per cent. Colliery owners had been debating for some months whether or not such an object could ever be attained. During the past week or two the competitors with the Midland Federation owners had been seriously considering whether such a scheme could be cast for that part of the county. In that day's paper they had clearly justified the assumption that such a thing could be done in the Northern coalfield. The owners, it was reported, had agreed to have a company entitled the Sales Association, and it was definitely decided that for this year the minimum selling prices should be fixed at from 7s. 3d. to 7s. 9d. less 2½ per cent. per ton, according to quality, for gas coal. Now, if the owners in the North of England could meet together, compare notes, and finally agree that gas coal should be sold for a certain price for one year definitely, there was no reason why the owners connected with the Federation of Great Britain should not do the same. The great bugbear which had been held out to frighten the Midland Federation miners had been the keen competitive system adopted in the North of England. This bugbear, at all events, might be swung either north, south, east or west, and it would not have the least effect in the future. If a minimum selling price of coal could be arrived at, why not a minimum wage for the worker? If 7s. or 7s. 9d. per ton was a test that the owners in the North of England could pay the present wages for the coming year, then it was clear those owners connected with the Miners' Federation could certainly do the same, because there were no more difficulties in the Midland Counties than there were in the Northern Counties.

ELECTRICAL ENGINEERING LABORATORY.—The following letter has been sent to Professor Jamieson, M.Inst.C.E., F.R.S.E., signed by Mr. Alan E. Clapperton, secretary of the Glasgow University Court:—I have to inform you that the Court at their meeting on the 8th inst. agreed to recognise the day lecture and laboratory courses delivered by you on electrical engineering as qualifying *pro tanto* for graduation in science under section IV. of the ordinances regulating degrees in science in engineering.

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PROVINCIAL SHARE MARKETS.

THE CORNISH MINE SHARE MARKET.

MR. SAMUEL JOHN DAVEY, Dealer in Cornish Mine Shares, Redruth, Cornwall, reports under date of February 15 (4 o'clock), as follows:—There has been but very little doing in our market this week. Prices have slightly declined. To-day market is dull and inactive. Following are quotations:—Blue Hills, ⅛ to ¼; Carn Brea, 13 to 13½; Cook's Kitchen, ⅜ to ⅜; Dolcoath, 69; to 70; East Pool, 11 to 11⅛; Killifreth, £3 14s. to £3 16s.; South Condurrow, ¼ to ⅜; South Croftv, 2 to 2⅛; Tincroft, 11 to 11⅛; West Frances, 1⅛ to 1⅜ West Kitty, 7⅜ to 7⅝; Wheal Agar, 2⅛ to 2⅜; Wheal Basset, 3⅜ to 3⅝ Wheal Grenville, 14⅛ to 15; Wheal Kitty (St. Agnes), 11s. to 13s.

MR. MICHAEL WILLIAMS HAWDEN, Mining and Assaying Offices, Liskeard, Cornwall, writes (February 15) as follows:—The little improvement of last week was only temporary, tin having again receded to the lowest point known for many years; quotations nominal, and the mining market almost devoid of business. Closing prices:—Blue Hills, 2s. to 2s. 6d.; Carn Brea, 13¼ to 13⅛; Cook's Kitchen, e.o., ⅜ to ½; Dolcoath, 69 to 69½; Devon Consols, 1¼ to 1⅜; East Pool, 11 to 11⅛; Killifreth, 3¼ to 3⅜; Levant, 5⅜ to 6; Phœnix United Mines, ⅜ to ½; South Condurrow, ⅛ to ¼; South Croftv, 1⅛ to 1⅜; South Frances, ⅛ to ¼; Tincroft, 11¼ to 11½; West Frances, 1⅜ to 1⅝; West Kitty, 7⅛ to 7⅜; Wheal Agar, 2⅛ to 2⅜; Wheal Basset, 3⅛ to 3⅜; Wheal Grenville, 14⅛ to 14¾; Wheal Kitty, 8s. 6d. to 10s.

Messrs. ABBOTT AND WICKETT, stock and share brokers, and mining share dealers, Redruth, write under date of Thursday, February 15 (four o'clock) as follows:—The continuous drop in tin has checked the demand for shares which was apparent last week. However, prices are practically unchanged, and holders do not seem disposed to part with their shares at present, believing that the rates now ruling for tin cannot last very long. Quotations herewith:—Carn Brea, 13¼ to 13¾; Cook's Kitchen, ⅜ to ⅜; Dolcoath, 69 to 70; East Pool, 10¾ to 11⅛; Killifreth, 3⅜ to 3¾; Phœnix, ¼ to ⅜; Polberro, ⅛ to ¾; South Condurrow, ¼ to ⅜; South Croftv, 1⅞ to 2⅛; Tincroft, 11 to 11⅛; West Frances, 1 to 1⅛; West Kitty, 7⅛ to 7¾; Wheal Agar, 2⅛ to 2¾; Wheal Basset, 3¼ to 3¾; Wheal Friendly, 2s. to 4s.; Wheal Grenville, 14¼ to 15¼; Wheal Kitty, ⅛ to ¾. Tin, 68⅜.

MANCHESTER.

Messrs. JOSEPH R. and W. P. RAINES, stock and share brokers, Queen's Chambers, 7, Market-street, write February 15, 1894, (noon):—The movements during the past week in the several departments of rails are fairly distinct on the week, though at the same time contradictory in different sections. Notwithstanding the distinctness of changes exhibited, as compared with figures of a week ago, there have been some oscillations which would be better described daily. On Friday last the near approach of the settlement tended to keep down new business, but a good tone remained for home rails generally, and particularly for Scotch stocks and one or two mineral lines. The restriction of business made a few others just the turn easier. Americans, Canadians, and Mexicans were but little done, but the first named were just a trifle stronger. Saturday produced, as usual, but a straggling return of transactions, but Caledonian Deferred were exceptionally done, repeatedly at better prices. These and North British Ordinary showed advances, but prices in Home Rails generally underwent no changes of moment. Americans fairly steady. Canadians just a mark or two, but Mexicans ignored. The effect of the gale of Sunday was felt very much in the interruption of telegraphic and telephonic communication. This made business well-nigh impossible, but home rails maintained values and Scotch stocks were again in demand. Other rails altogether neglected. Coal and Iron Companies shares strengthened a little generally. Tuesday brought out a further strong inquiry for home rails and a fair number of transactions at improving prices resulted, latest figures realised being up to or very near the best of the day. Americans responded to New York prices of previous day and opened flat. A few dealings were marked usually lower on any repetition of business, as there was but little demand here at the lower figures. In Canadians Trunk issues moved sympathetically though the traffic (£5632 decrease) was rather better than had been anticipated. The continued rise in home rails had a check yesterday owing to realisations of profits, but this, notwithstanding, Brighton A and York A again showed marked advance in values. With few, and mostly solitary markings of business, Yankees and Canadians gained ground a trifle as against the previous night's closing prices. Mexican ordinary and First Preference with business only in the former were put up in price. Traffics without any abnormally large (North Eastern £7287 being the only notable one) were all increases. This morning's opening shows no change of any amount (in nominal quotations) from last night, whilst in Americans there are a few instances of alteration, but they are very small fractions on the better side. For the most part, however, Trunk issues open distinctly, and Canadian Pacifics fractionally easier. Mexican Rails are decidedly higher again this morning, principally in the First Preference and Ordinary, though Second Preference have participated a little. Consols have gained ¼ on the week. Advances are general in both Colonials and Home Corporation Stocks, &c., the amount of advance being about ⅛ per cent. in nearly all cases of change. Foreigners too have a very good record; for, against a number of advances there is only one decline to notice, and that only ½ in Spanish 4 per cent. Argentine 6 per cent. and 5 per cent. are each 1¼. Uruguay 2¼ per cent. 1¾. Mexican 6 per cent. 1¼, Turkish 1871 ¼, and Italian Rentes 3¼ higher. Business in the miscellaneous classes has been of a very general character reaching but a moderate total of transactions however.

BANKS.—Beyond a few repetitions of business in Consolidateds, Districts, and Manchesters and Salfords transactions are very few. Changes in prices have occurred in a very small number of cases. They are as follows: Higher: District ¼, Oldham Joint Stock 1⅛. Lower: Imperial of Persia ¼, National Provincial ⅛

INSURANCES.—Business meagre and straggling. Higher: Commercial Union ½, London and Lancashire ¼, Ocean Marine ½, Manchester Fire ¼ to ½, and Liverpool, London and Globe ¼. Lower: Royal ⅛, Lancashire ⅛, and Palatine ⅛.

COAL, IRON, &c.—These show some irregularity in variations in the current prices, but little business is reported, and that little confined here to Bolckows and Ebbw Vales. Bolckows have recovered a little of their recent partial relapse. John Brownes are ⅛, and Cammells 2 higher. On the other side, Ebbw Vales are ¼, Staveley C 1, and Tredegar A ¼ to ½ down.

COTTON SPINNING, &c., shares very dull, but prices are fairly steady except for the lowest rank concerns.

MINES.—Hardly anything doing, and changes contradictory in small fractions on either side.

TELEGRAPHS AND TELEPHONES.—Anglo Telegraphs ordinary and preference better. National Telephone ordinary ⅛ easier.

BREWERIES.—This market has furnished the most phenomenal turn of the week—to wit, the movement in Allsopps. Notwithstanding frequent and wide fluctuations herein, they finish with a net advance of 17½ compared with last week's prices. Guinness are 2 down. Locals are but little altered, but that little is to better prices.

MISCELLANEOUS.—Changes mostly for the better, but nothing of special moment therein. Rochdale Canal 1⅛ to 4 down. Ship Canals better, but not quite maintaining best points of the week.

LATER (4 p.m.).—Home Rails a little weaker to-day. In Americans the tone is rather stronger. In Canadians the dividend announcement (1¾ on Grand) brought in sellers, but lowest prices were soon improved upon. Mexicans as we have said opened better, but they gave way soon afterwards, and near the close came into demand again.

SCOTCH MINING AND INDUSTRIAL COMPANIES SHARE MARKETS.

STIRLING.—MR. J. GRANT MACLEAN, stockbroker and ironbroker (February 13), writes:—During the past week the more confident tendency has continued to rule, notwithstanding the intervening fortnightly settlement, and the interruption to business caused by a breakdown in telegraphic communication owing to a gale. The increased activity in the shipbuilding and engineering trades has a fair prospect of extending to the other branches of trade provided strikes are avoided. The rates of continuation to new account, February 28, were not heavy, although a little higher than last time.

In shares of coal, iron, and steel companies prices are steady. The report of the Marbella company has been issued. Last year's output and profits are both disappointing. Only 20,056 tons were sold, and owing to the fall in prices the profit was reduced from £12,000, which it would have been at last year's prices, to £2000. The report, however, confirms the renewal of the lease for 15 years with Messrs. Heredia. Bolckow Vaughan and Co. are at 13½, Bengal Iron and Steel 16s. 3d., Cairntable Gas Coal 9¼, Ebbw Vale 8¾, Niddrie and Benhar 46s. 6d., Rhymney Iron 31s., and Steel Company of Scotland 31s.

In shares of copper concerns prices are a little firmer for Mason, Tinto, and Tharsis. The Arizona Company has decided to issue 160,000 New Preference shares of 5s. each. The result of this company's working for last year is stated to have been more favourable.

Home mines remain neglected. Killifreth are 76s. 3d., Leadhills 22s. 6d., and Tincroft 11⅝.

In shares of gold and silver mines there has been more business doing. Montana are about 5s. 6d. African Gold Recovery Shares declined to 21s., but have since recovered to 24s., and it is announced that a total of 51,000 ounces has been recovered by their process last month, which compares with 17,500 ounces in January, 1893. Wolhuter shares have improved as a dividend is expected on them next month. Chartered and Consolidated Gold Fields of South Africa shares have also been in favour. Broken Hill Proprietary declined in sympathy with silver to 43s., but have since recovered to 48s. ex dividend; last year they were as high as 91s. 3d. Balaghat, are at 5s. 9d.; Cassel, 13s. 6d.; Champion Reef, 72s. 6d.; Day Dawn P.C., 5s. 6d.; Frontino, 19s. to 19s.; Gold Fields of Mysore, 25s.; Glencairn, 20s.; Gravel, 5s.; Joe's Luck, 3s. 3d.; Kimberley Roodepoort, 10s. 6d.; New Queen, 9s. 3d.; New Central Burmo, 3s. 9d.; Oceana Land, 50s.; Sahi Ophir, 1s. 3d.; Silati (New), 4s. 6d.; St. John del Rey, 21s. 6d.; and Transvaal Development, 11s.

In shares of miscellaneous companies there has not been much business doing. In oil companies shares Broxburn are better at 2¹³/₁₆, and Young's at 28s. 6d. Caledonian Mineral Oil Debenture Stock offered at 55, and Field's Candle shares 5¼. Nobel's Explosives are at 13¼, Potok Petroleum 7s., and Roburite Explosives 31s. 3d.

EDINBURGH.

Messrs. THOMAS MILLER and SONS, stock and share brokers, 69, Hanover-street, Edinburgh, report as follows under date of February 15:—Caledonian Railway Deferred and North British Railway stocks have attracted a great deal of attention and a large business has been done in them. Caledonian Deferred has advanced from 40⅛ to 41¹⁵/₁₆. North British from 39⅞ to 40¹⁵/₁₆. Great Northern Deferred from 57⅛ to 58, Sheffield Deferred from 26⅛ to 27⅜. British Linen Bank stock has receded from 375 to 371, Commercial have improved from 66⅝ to 66¾, National from 332 to 333½, Alliance Insurance have risen from 2¼ to 39 3s. 6d., Caledonian from 30 to 30⅛, Commercial Union from 29⅛ to 30⅛, Guardian from 8⅞ to 9, Liverpool, London, and Globe from 42 to 43½, London and Lancashire from 14⅞ to 15¼, North British and Mercantile from 34 to 35¼, Royal from 44¾ to 45¼, Scottish Accident from 31s. 6d. to 32s, Scottish Life have declined from 11s. 6d. to 10s. 32s., Edinburgh Tramways have risen from 5 cum to 5¼ ex dividend of 5s., Broxburn Oil 2s. 6d. up at 8¾, Coat's 7s. 6d., up at 18¾, Distillers 16, 3d, lower at 15¼.

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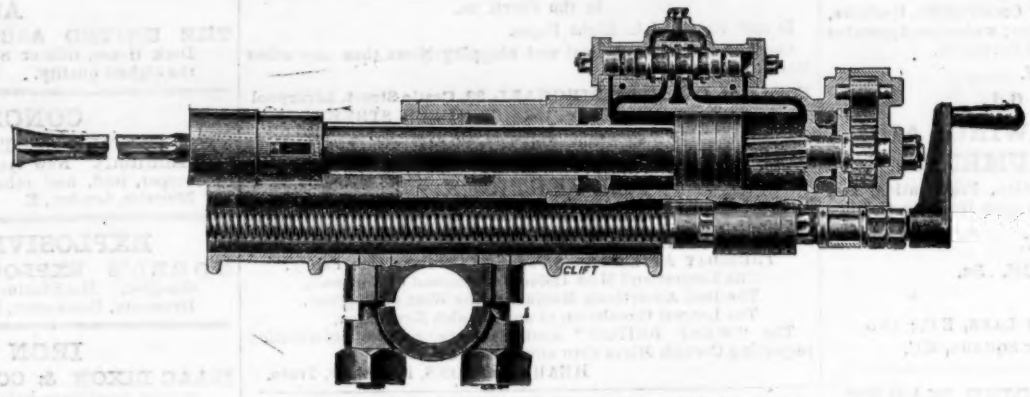

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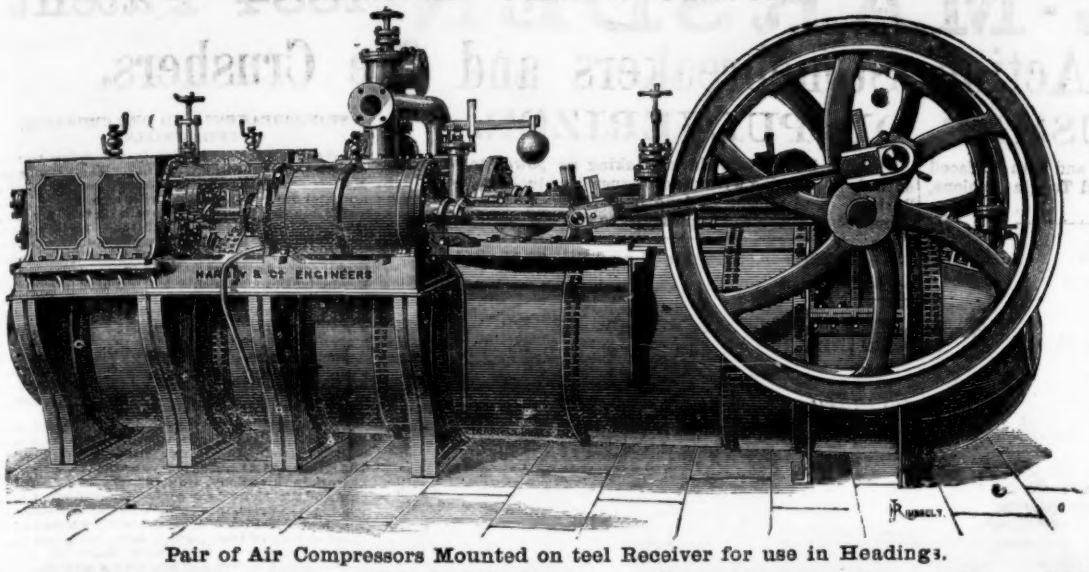

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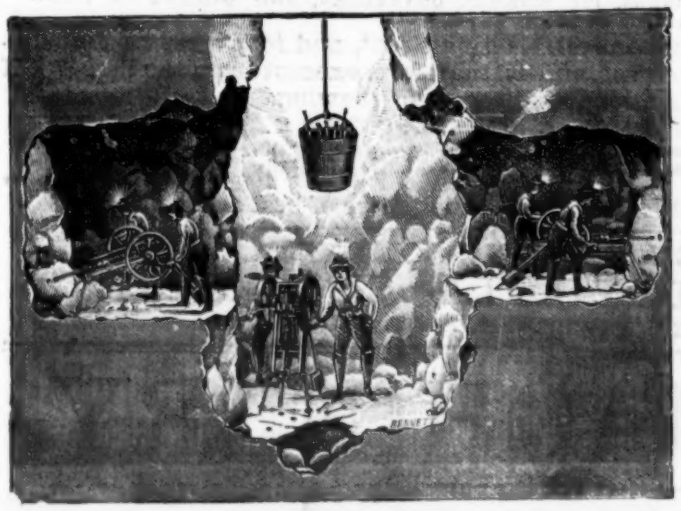

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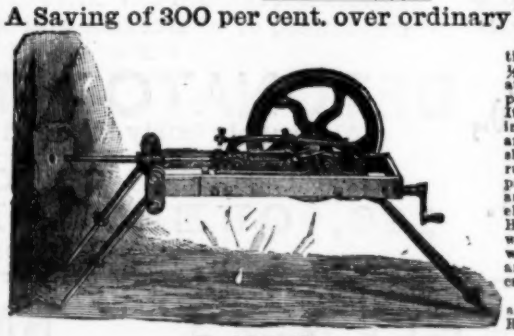

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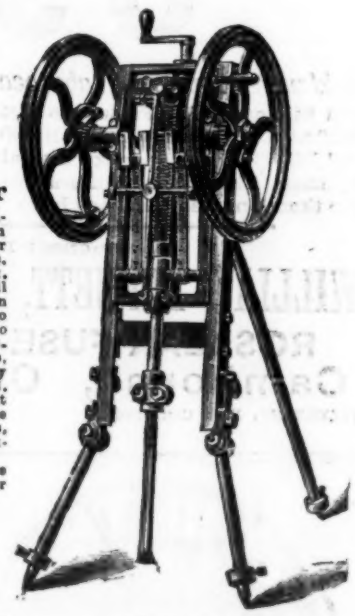

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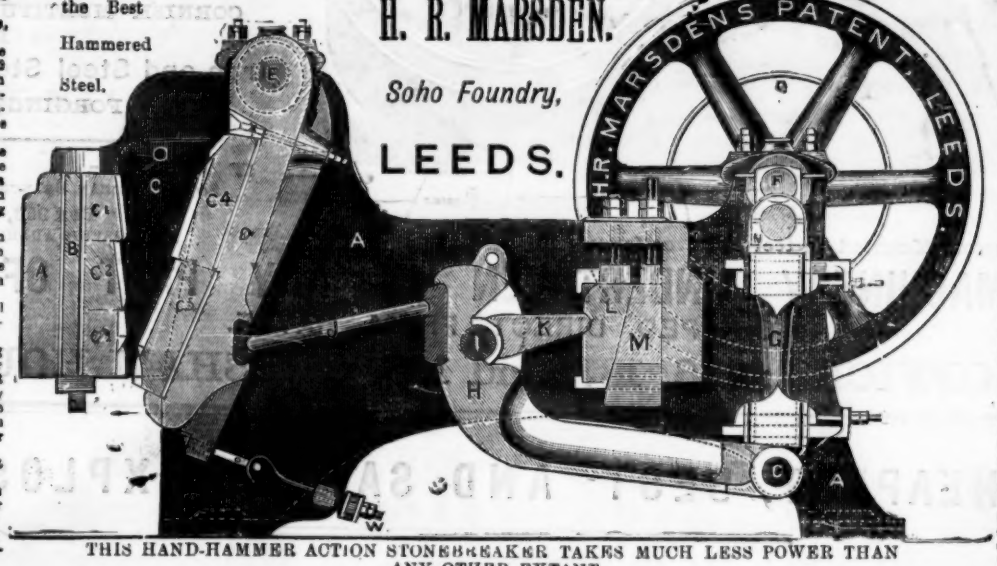

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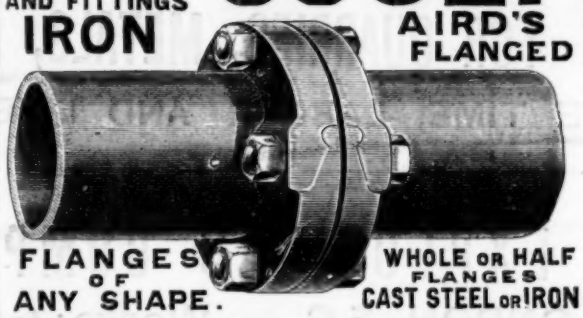

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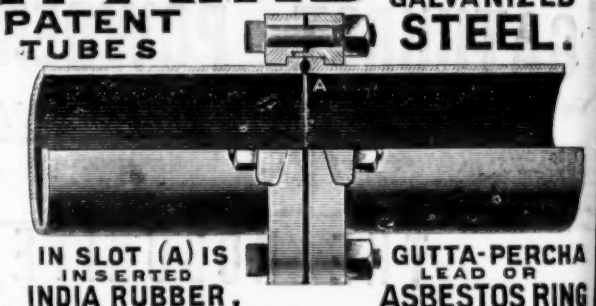

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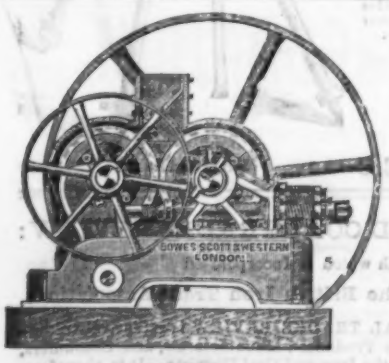

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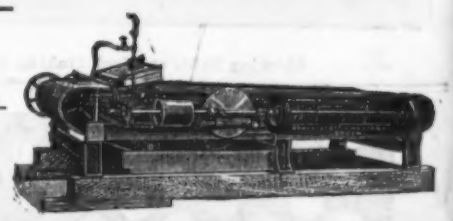

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